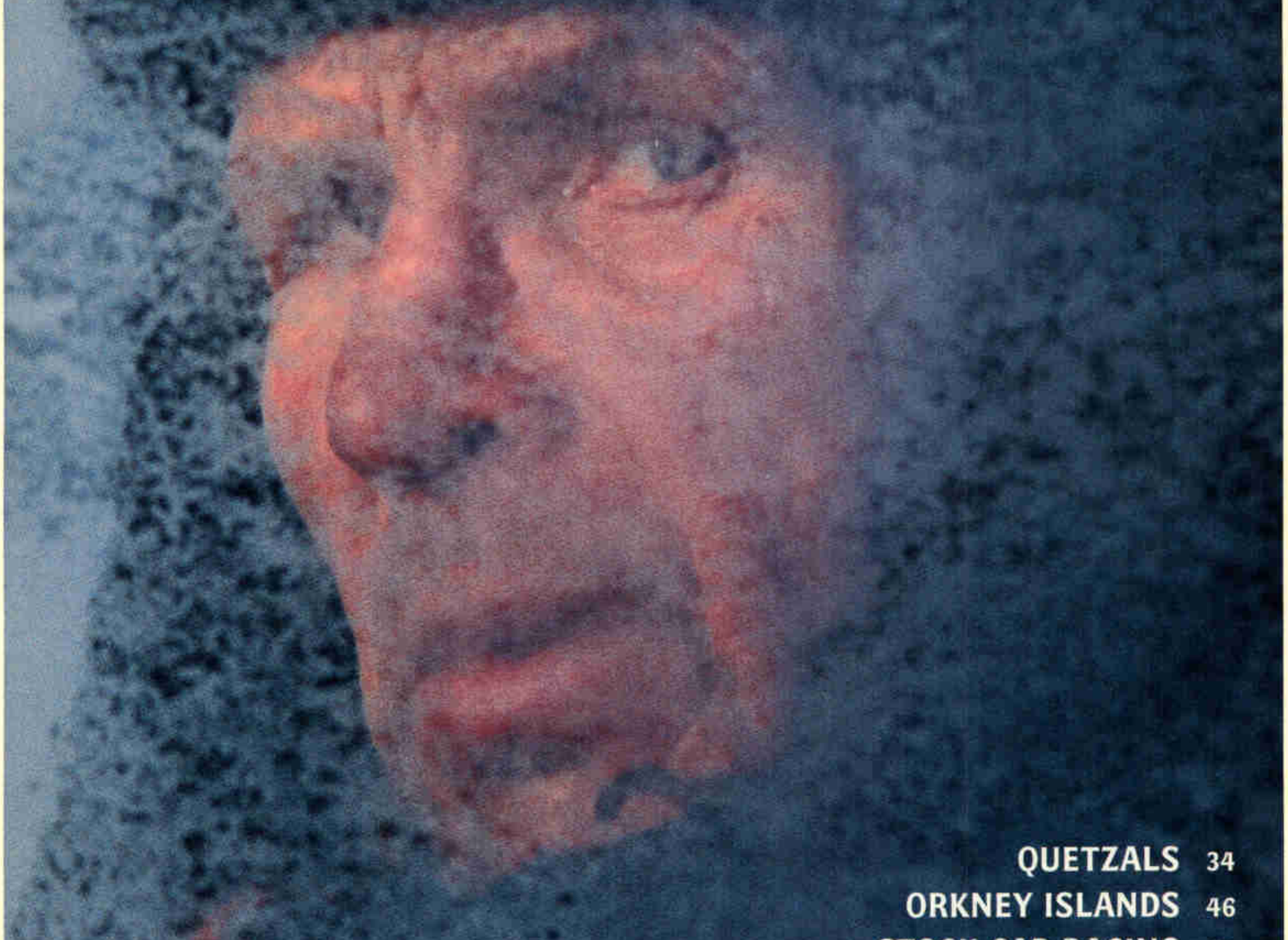
VOL. 193, NO. 6 JUNE 1998

NATIONAL GEOGRAPHIC



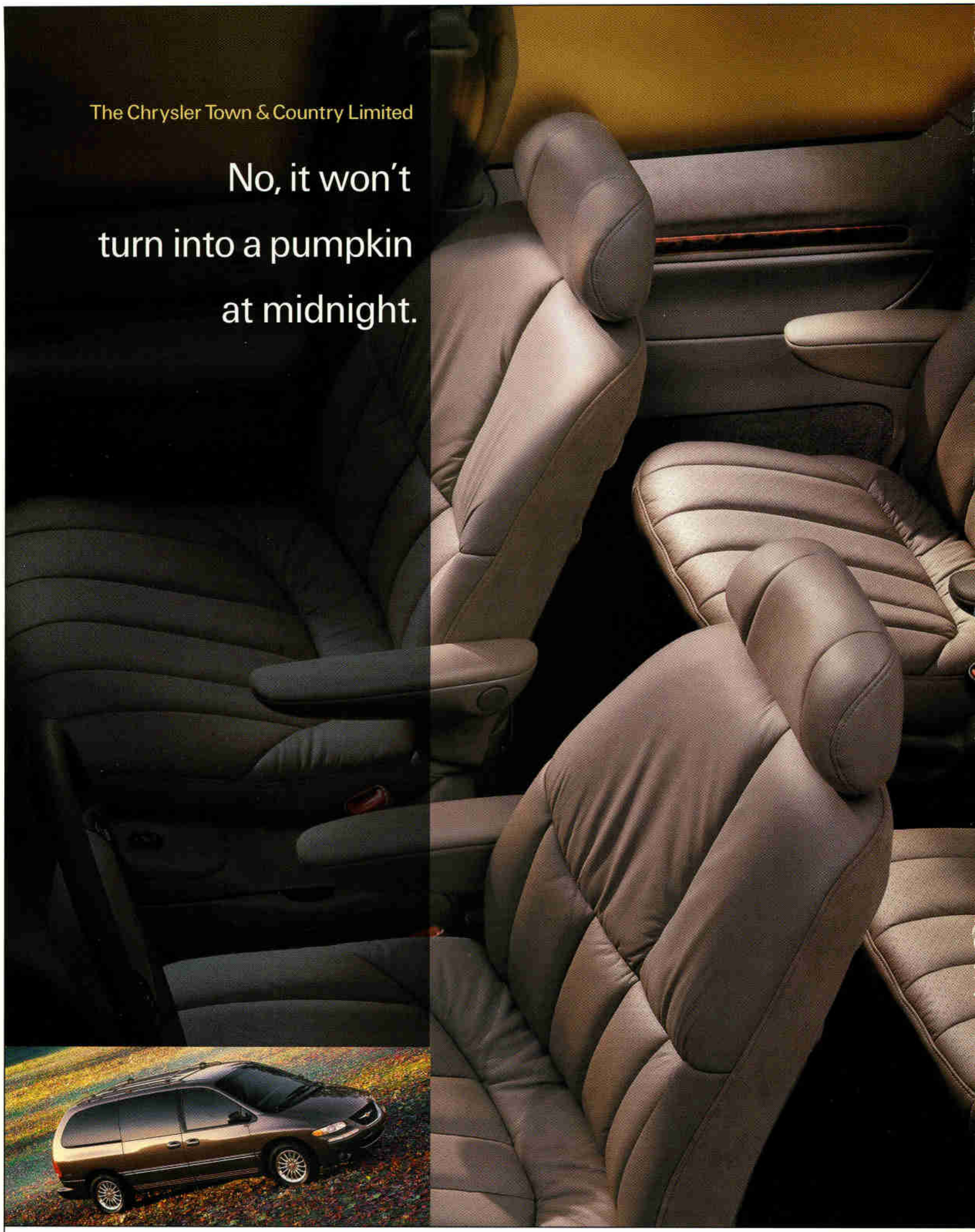
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TRANS-SIBERIAN RAILROAD

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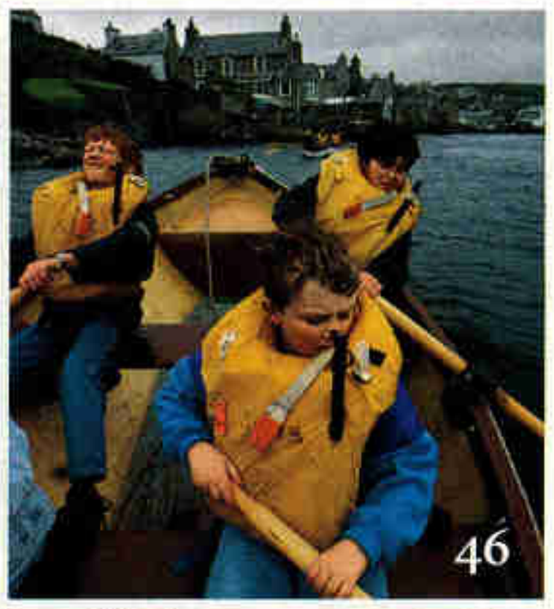
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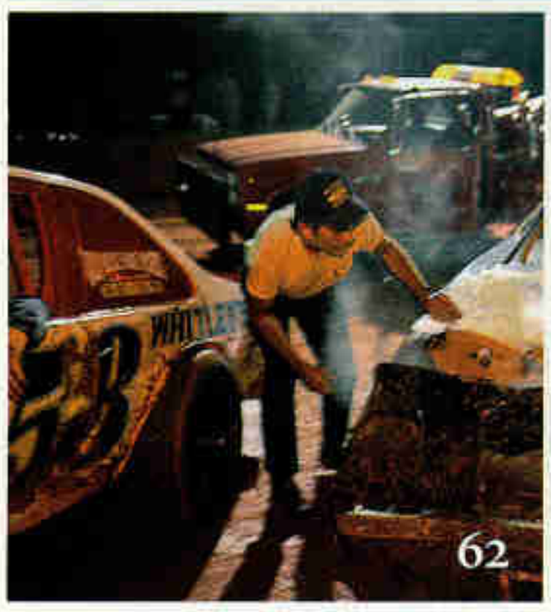
NATIONAL GEOGRAPHIC

JUNE 1998

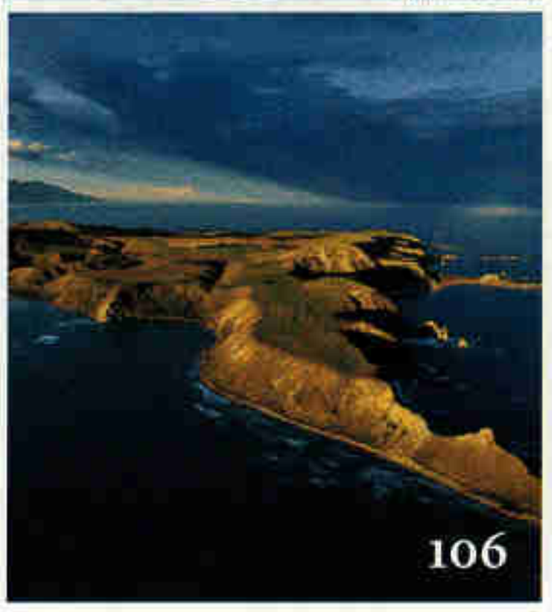














2 **Russia's Iron Road** *Stretching 5,770 miles from Moscow to Vladivostok, the Trans-Siberian Railroad, the world's longest, links a land still adjusting to the end of the Soviet era.*
BY FEN MONTAIGNE PHOTOGRAPHS BY GERD LUDWIG

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ARTICLE AND PHOTOGRAPHS BY STEVE WINTER

46 **Orkney: Ancient North Sea Haven** *Verdant gems on a violent sea, these Scottish isles reflect pride in a Viking past.*
BY BILL BRYSON PHOTOGRAPHS BY JIM RICHARDSON

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BY PETER DE JONGE PHOTOGRAPHS BY DAVID ALAN HARVEY

84 **Golden Harvest of the Raji** *Honey hunters in southern Nepal trace floral trails to lofty hives. But life among the Raji is no stroll down a garden path.*
ARTICLE AND PHOTOGRAPHS BY ERIC VALLI

106 **Deep Mysteries of Kaikoura Canyon** *Does the legendary giant squid lurk in this mile-deep ravine off New Zealand? Sperm whales bearing scars of huge thrashing tentacles suggest so.*
BY THOMAS B. ALLEN PHOTOGRAPHS BY EMORY KRISTOF AND MARIA STENZEL

118 **Adirondack High** *New York State's blue-water lakes and fir-clad mountains promise peace of mind—despite periodic spats between conservationists and eager developers.*
BY JOHN G. MITCHELL PHOTOGRAPHS BY MARIA STENZEL

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The Cover

Peering through the frosted window of an elektrichka, *an electric local train, a fur-capped passenger leaves the city of Krasnoyarsk, one stop on the Trans-Siberian Railroad. Photograph by Gerd Ludwig*

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NATIONAL GEOGRAPHIC

Behind the Scenes

Are We There Yet?

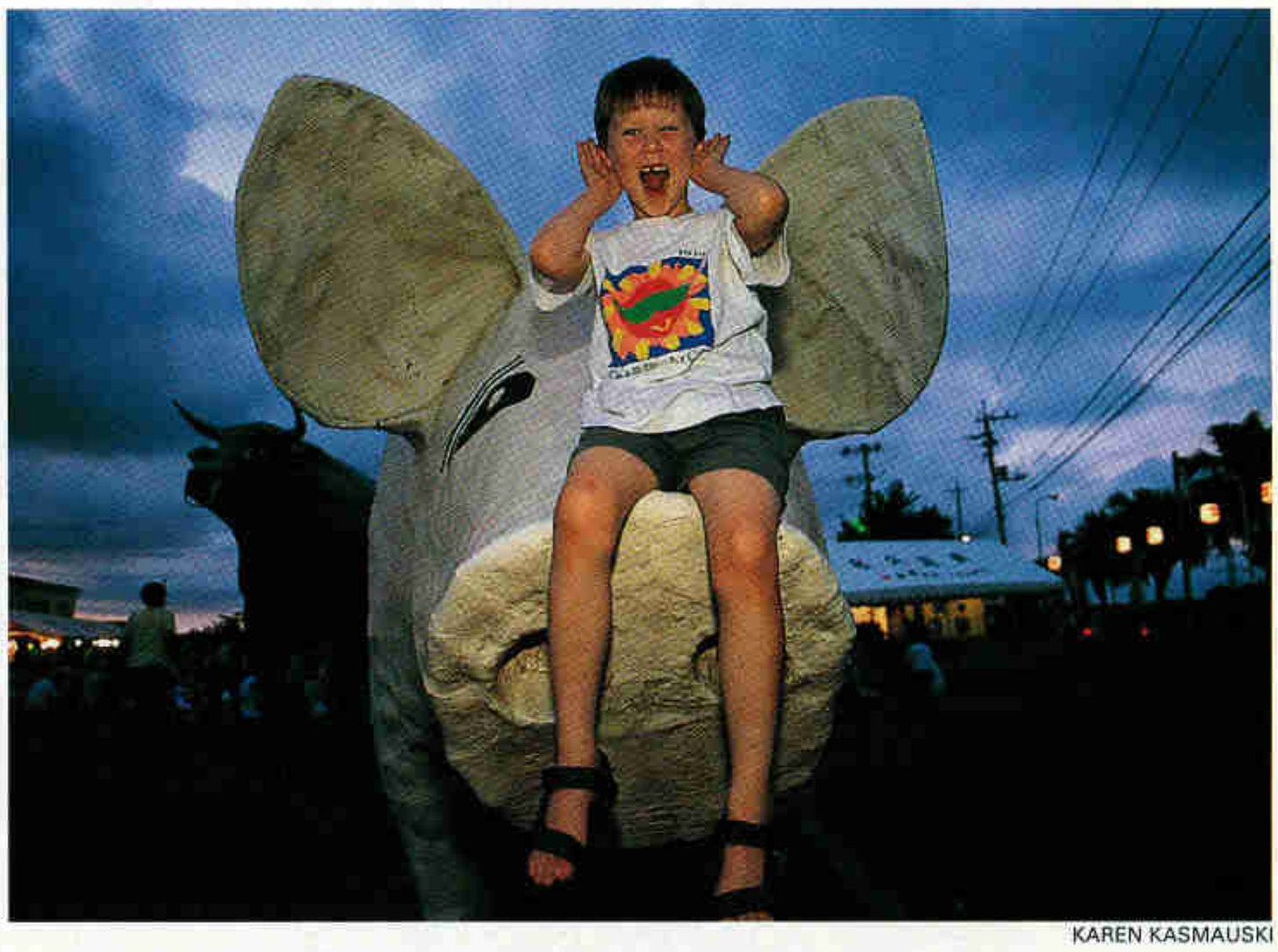
Was your passport filled with stamps before you started kindergarten? If so, you just might be a photographer's kid. "I was in my mom's stomach the first time I went to Japan," boasts Will Douthitt, age 8 (pigging out in Okinawa, right). He returned with sister Katie while mother Karen Kasmauski shot our Okinawa story (June 1997).

Just once, Emily Doubilet—daughter of underwater shooter David Doubilet—would like to walk through an airport carrying a single suitcase. "When my family travels," explains the 14-year-old (diving in Australia, right), "Mom, Dad, and I each drag two carts overflowing with camera cases."

"I don't take much when we go away," insists Noel Johns, age 7 (far right, with Zulu friends). Her dad, Chris Johns, moved the family to South Africa while he worked on our parks article (July 1996). "I'd rather go see rhinos," says Noel, "than stay in and play with toys."

Once school starts, schedules get complicated, so summer vacations mean work for these families. Years of trips impart practical skills.

When Cary Wolinsky broke his shoulder while shooting in Mexico last year, son Yari (right, in England), now 16, helped get medical aid, then booked a flight home. "Traveling as a family has caused havoc with school, friends, and bank accounts," says Cary, "but our experiences, as seen in Yari, tell me it's been worth it."



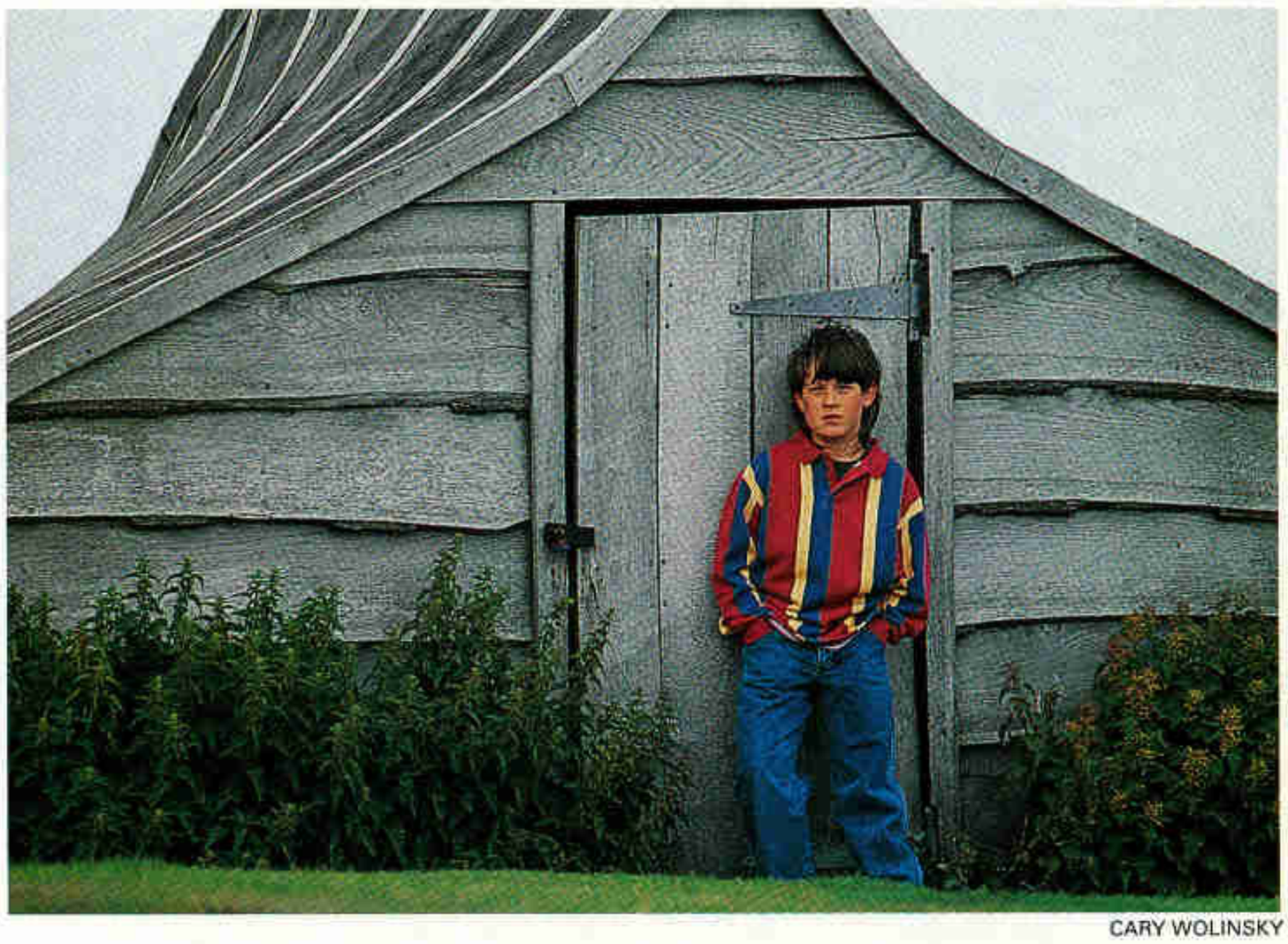
KAREN KASMAUSKI



DAVID DOUBILET



PATRICIA DE LA HARPE



CARY WOLINSKY

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BOTH BY RICHARD NOWITZ

Some Creatures Great and Small

Sometimes souvenirs from our stories stick around the office—forever. This stuffed sheep carried by staffer Charlene Valeri was first seen jumping over a bed in our December 1987 article on sleep. "She needed a little hoof help," Charlene says of the creature's trip to the photo equipment shop (above) for repairs. These days the sheep graces the office of Charlene's boss, Associate Editor Robert Poole.

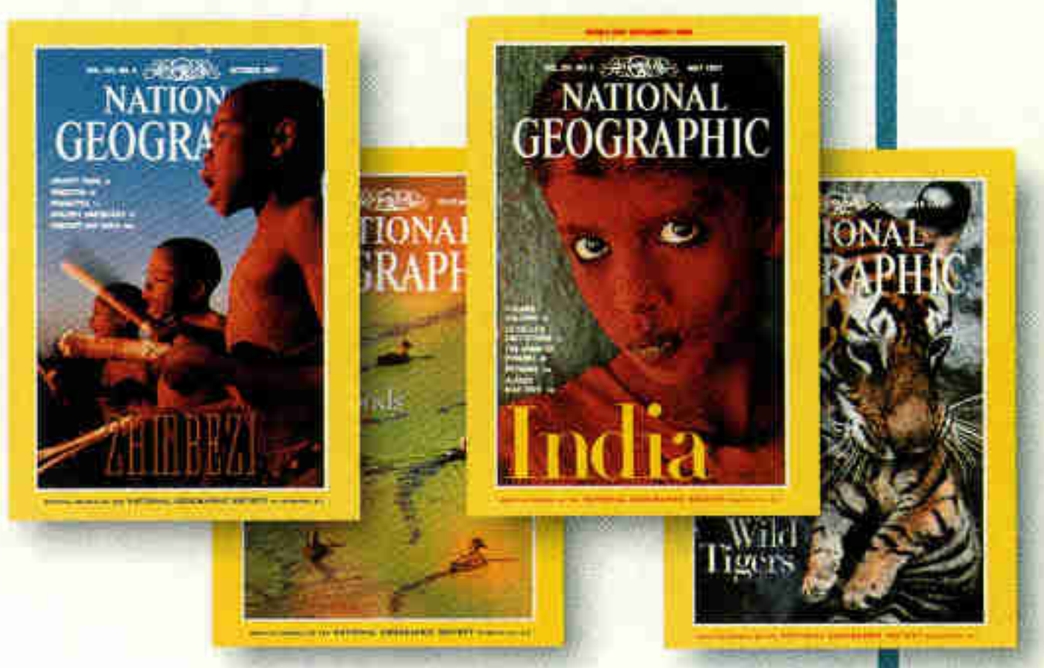
An unusually large dried piranha (right) cruises our halls on



the prow of a film delivery cart. The toothy fish was a gift some 20 years ago to Illustrations Editor Jon Schneeberger from Wolfgang Jesco von Puttkamer, an old Amazon hand who specialized in stories on Brazil's Indians. "He'd send me all kinds of stuff he'd traded for down there, along with his film for the magazine. I never knew what I'd find when I opened those packages." Retired since 1994, Jon didn't realize von Puttkamer's old piranha was still doing cartduty at the Geographic. "That fish is still there?" he asked. "I want him back!"

Our Winning Ways With Photography

NATIONAL GEOGRAPHIC won 17 awards—including the prize for "Best Use of Photography in a Magazine"—at the 1998 Pictures of the Year contest sponsored by the Missouri School of Journalism and the National Press Photographers Association. First place in other categories: David Doubilet's "Tasman Sea" (January 1997) and Randy Olson's "County Fairs" (October 1997).





Black-necked Crane ***(Grus nigricollis)*** **Size:** Stands 90 - 130 cm; wingspan, 180 - 200 cm **Weight:** 6 - 9 kg **Habitat:** High-altitude wetlands of the Qinghai-Tibetan Plateau during breeding season; winters in lower elevation agricultural valleys; occurs in China, Bhutan, India and Myanmar **Surviving number:** Estimated at 5,600 - 6,000 Photographed by Rajesh Bedi

WILDLIFE AS CANON SEES IT

A newly hatched black-necked crane rests securely under its mother's wing. Both parents tend to their one or two chicks, and until the fall migration, they busily forage in high-elevation marshlands. The family stays together until the next breeding season, when the juveniles join non-breeding flocks and eventually form pair-bonds of their own. Regarded by local cultures as a symbol of luck and happiness, the black-necked crane is protected throughout its range, yet the species is particularly vulnerable in wintering areas due to habitat loss and degradation. As a global corporation committed to social and environmental concerns, we join in worldwide efforts to promote greater awareness of endangered species for the benefit of future generations.

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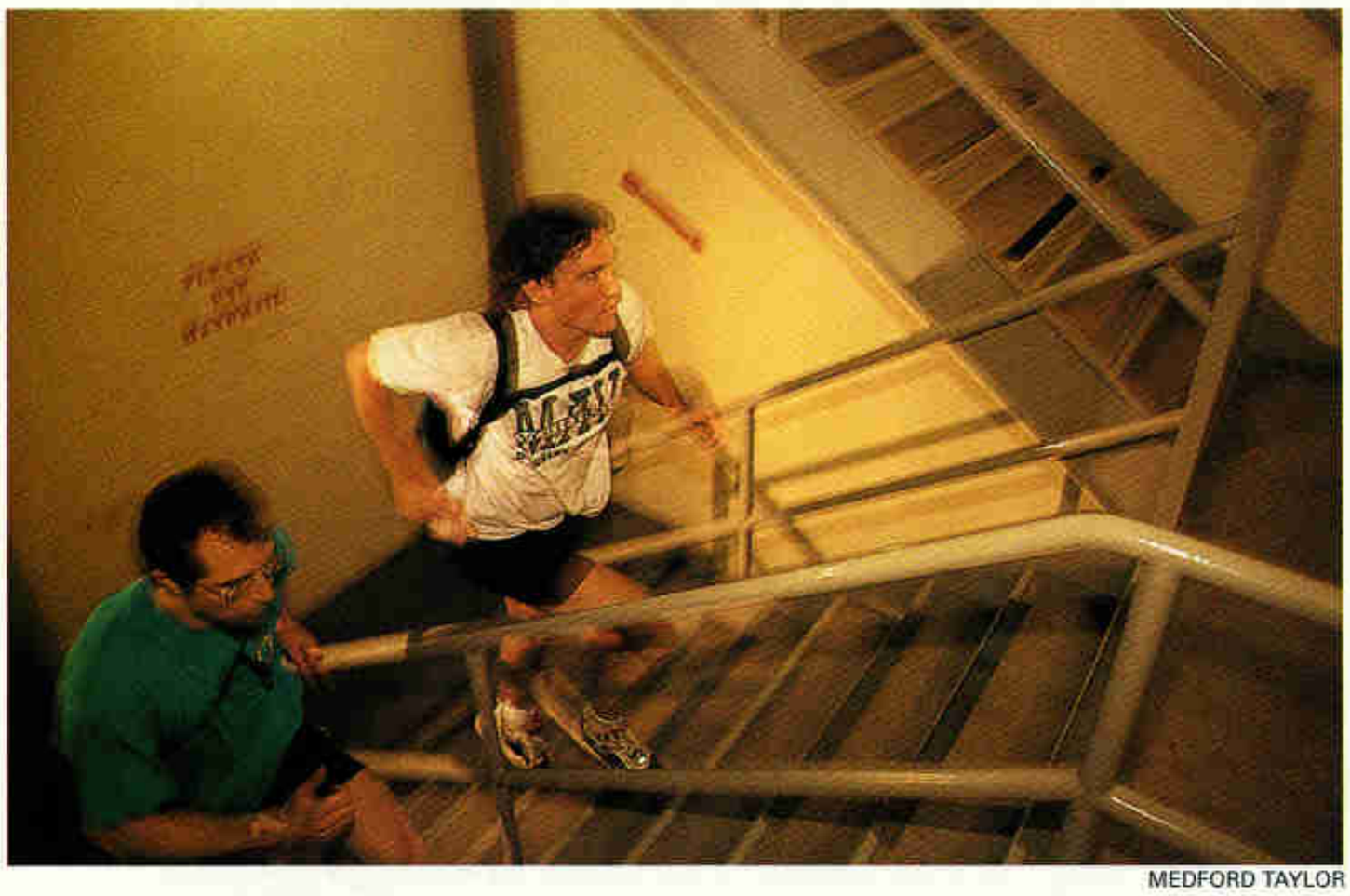
Canon

Another Thing to Do With Your Old GEOGRAPHICS



"This male African lion cub was found in Atlanta, Georgia, in the back of a car with the windows rolled up, in the sizzling hot sun," member Claudine Souris wrote us last summer.

Claudine, an attorney for animal welfare groups, says that lions and tigers are being bred on farms and sold illegally, often to become status pets of local gang leaders and drug dealers. Simba, as this cub was named, was rescued and taken to a foster home, where he immediately jumped on the sofa and grabbed the GEOGRAPHIC from the coffee table. He no longer devours the magazine though; Simba now calls a Georgia wildlife sanctuary home.



MEDFORD TAYLOR

Their Steps to Adventure

"Exploration isn't just for famous people with money," insists John Rutter of our Image Collection (above, at left). He should know. He was one of four Society staff members recruited by Bob Pratt of NG Maps for a three-week expedition to remote southern Chile last February. Here John trains with photographer Mark Thiessen by sprinting up the stairs of our ten-story headquarters. Ron Williamson and Michael Wilder completed the group; all are experienced hikers, ranging in age from 25 to 50. In Chile Pratt's team documented plant and animal life and climatic conditions in the 8.7-million-acre Bernardo O'Higgins National Park. Though adverse weather and a ripped raft kept them from finishing their intended 52-mile route, the group was proud to have made one of the few trips into the park's largely unexplored interior. Vows Bob, "I intend to return."

TEXT BY MAGGIE ZACKOWITZ

"Bee Prepared"

A Society program for Girl Scout leaders in the Washington, D.C., area helps promote girls' interest in geography. Now Scouts can earn this patch for activities such as competition in school geography bees.



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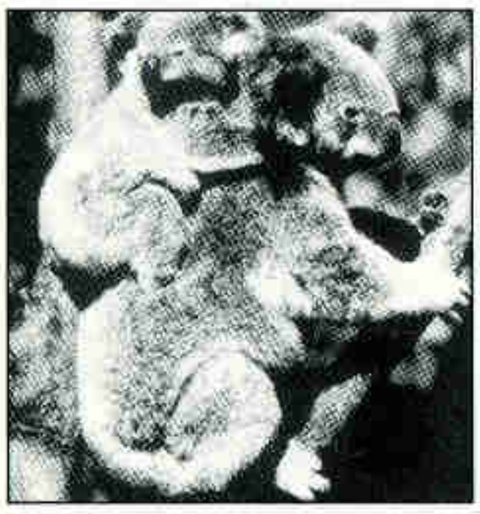
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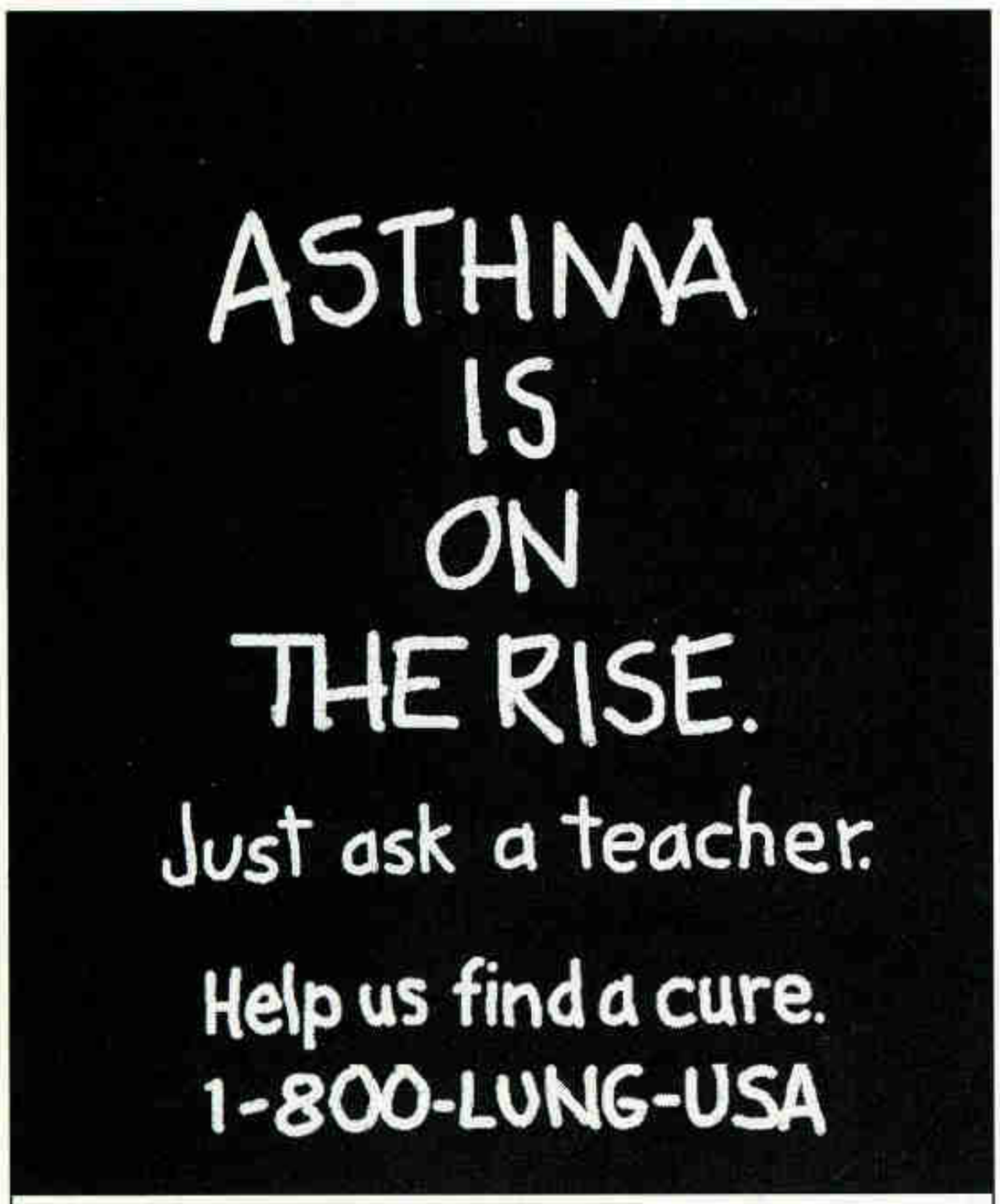
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Forum

Our February 1998 issue focused on exploration, which many readers found intriguing, but a number wrote of their distress over the absence of a particular explorer. Regarding the body-pounding series "by the gentleman biking around Australia," some readers suggested that he try a recumbent bicycle.

Revolutions in Mapping

As a student of geography and cartography and a recent graduate of the University of Wisconsin–Madison, I found the article was like a refresher course. It saddens me, however, that archaic methods of cartography using transits and theodolites are now rarely employed. Without the basic knowledge of why we take certain measurements, a million-dollar machine is useless.

SETH D. JACOBY
Miyako-shi, Japan

Some of history's most courageous mappers were native spies recruited by the British Survey of India. These men, called pundits, could travel where no European dared. Disguised as traders or pilgrims, they mapped clandestinely by counting their paces and using Buddhist rosaries to keep track. They carried a sextant, a compass, and a boiling-point thermometer (used to measure elevation), hidden in clothing and baggage, and plotted routes that had been blank spaces on British maps.

PAMELA LOGAN
Altadena, California

Exploration Map

Under the portraits of Lewis and Clark it is stated: "Their route through the Rockies was used by West-bound Americans." Few West-bound Americans followed their route. Instead they went, by the tens of thousands, through the South Pass, a route discovered in 1812 by Robert Stuart and rediscovered in 1823 by Jedediah Smith.

FRED K. FOX
Delhi, California

As I scanned your map with its 32 mini-portraits of great explorers, not one female face stared back. Have you forgotten Mary Kingsley, who in the 1890s entered villages in French Equatorial Africa never before visited by Europeans? Arlene Blum, with her female companions, was among the first to reach Annapurna's summit in 1978. Please remember in the future to include the accomplishments of both sexes.

LAURI ALICE BRUNTON
Philadelphia, Pennsylvania

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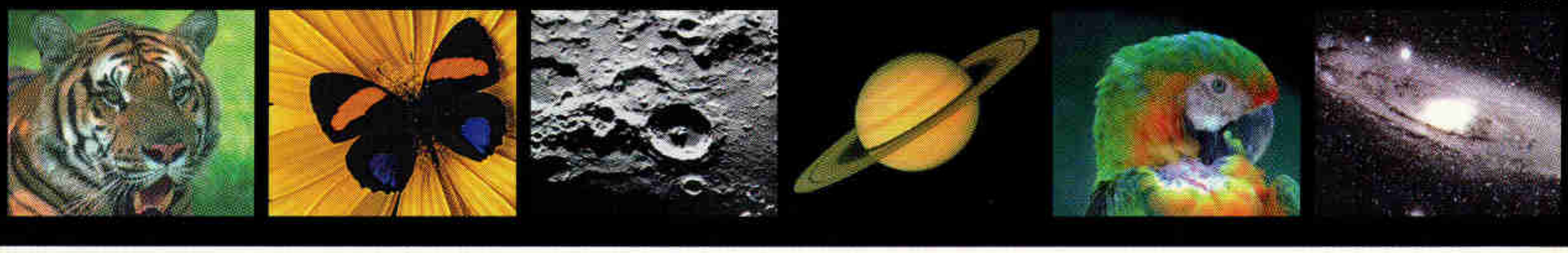
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Why Explore?

I am torn between feelings of elation at what the human race can discover and accomplish and feelings of despair and skepticism at our ability to act responsibly with what we find. If current and past activities are any indication of the way we will treat future planets and undiscovered ocean floors, then it may be time to reevaluate the need for continued exploration.

LESLIE SULLIVAN
Carson City, Nevada

As an archivist for the NASA History Office, I find great attention focused on humanity's first steps on the moon during Apollo 11, but Apollo 8 faced many hazards and unknowns and achieved notable firsts in space. No one had traveled so fast or so far from Earth before. Apollo 8 was the first to send people beyond Earth's gravitational well and orbit the moon. For the first time human eyes gazed at the moon's far side and the majestic sight of an earthrise over the battered lunar landscape. The crew's reading from Genesis on Christmas Eve, 1968, only added to the drama.

MARK E. KAHN
Fairfax, Virginia

I enjoyed the article very much, but author Priit J. Vesilind raised a disturbing issue about meaningful exploration today taking more than courage and ambition—often requiring specialized education and expensive hardware. As leader of a team studying survival strategies of nomadic cattle-herding communities in India near the Tibet border, I spent most of this winter on a cold desert plateau at altitudes of 15,000 to 17,000 feet, with temperatures sinking to minus 45°C at night. We have a low budget, and we survived in ordinary tents around closed fires using dung as fuel, the same as the community we are studying. No frills. I would like to think that this makes us as much explorers as those who write for NATIONAL GEOGRAPHIC.

AJIT CHAUDHURI
New Delhi, India

I take issue with Robert Ballard's statement "If you're not doing worthwhile science, you're not an explorer. You're just wandering around." Our universe is far too vast and wondrous a place to confine within strictly scientific parameters. The pages of NATIONAL GEOGRAPHIC have always given space to explorations of a nonscientific nature, such as the adventure-based Queen Maud Land article, and I hope will continue to do so.

JEREMY WERLIN
Cedaredge, Colorado

Queen Maud Land

I have read the article over and over in an attempt to find any justification for Society support. I can find none. At least the National Science Foundation had the wisdom to withhold support.

SAM SHAW
Scotts Valley, California

While the National Science Foundation does not support private Antarctic expeditions, we do not try to keep them out. Indeed we cooperate to enable visits when possible to U.S. research stations and to help uphold Antarctic conservation. Adventure tourism can be dangerous. Our aviators in long-range ski-equipped airplanes have braved extreme conditions to rescue those in trouble, both government and private parties. We want those situations to be as rare as possible.

NEAL LANE
Director, NSF
Arlington, Virginia

I have been a lifelong beneficiary of the magazine's love affair with mountaineering. This article is no exception. I appreciated the team's willingness to "leave no trace" even to the point of porting out their own human waste. On the final descent from the Razor, did they clean out the bolts used during the ascent (page 61)? Also in that photo, why is the author not wearing his helmet?

DICK MADSEN
Seattle, Washington

The climbers removed all but a handful of bolts, which they needed to rappel down the face. Krakauer was not wearing a helmet because he was not climbing or in danger of getting hit by rockfall.

Last September the University of Alaska's synthetic-aperture radar (SAR) facility downlinked data on Antarctica from Canada's radar satellite. The SAR, which uses very long wavelengths, was able to penetrate clouds and lightly packed snow. In a year or so, when all the data have been interpreted, we will have high-resolution digital mosaic maps of all Antarctica and its ice sheets for the first time ever.

TINA FOSTER
Fairbanks, Alaska

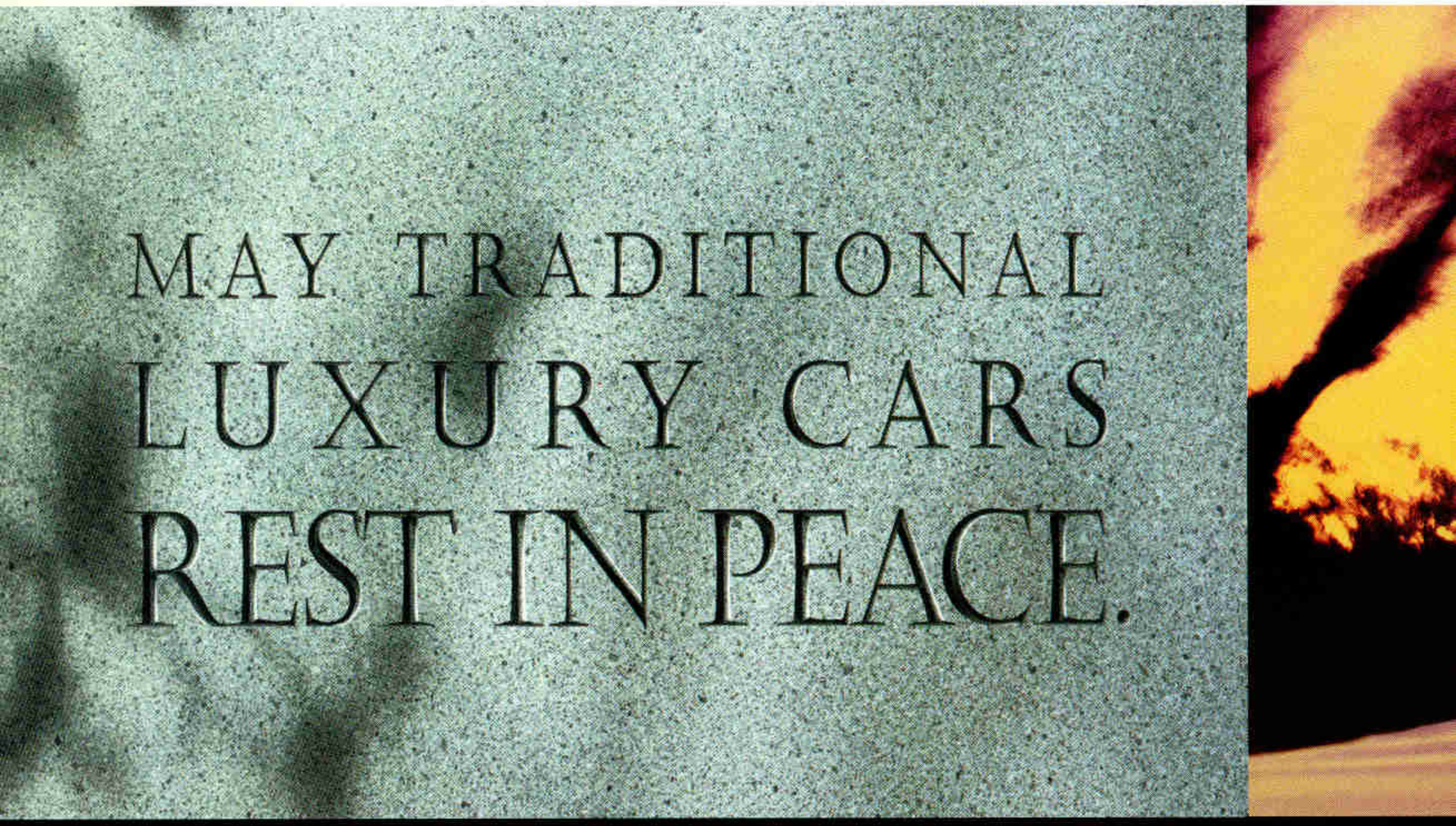
Jacques-Yves Cousteau

Mr. Cousteau opened my eyes at a very young age to the incredible world beneath the sea. Living in Wisconsin, I had never seen the oceans. He was able to take me there with him every time I saw his TV specials or read his articles. To this day I love the oceans and the creatures that live within.

RANDY KIECK
Waukesha, Wisconsin

Author Luis Marden asks, "Who will carry on Jacques-Yves Cousteau's work?" Francine Cousteau has already selected New Zealander Sir Peter Blake to head the Cousteau Society and skipper *Calypso II* when it is built. Blake is a well-known New Zealand yachtie who displayed wonderful leadership skills in winning the Whitbread race in 1990 and leading the successful New Zealand challenge for the 1995 America's Cup. Despite initial opposition from Cousteau's son, Blake is poised to take over after the next America's Cup, in Auckland, New Zealand, in 2000.

ANDREW MOFFAT
Invercargill, New Zealand



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Remember the *Maine?*

Concerning the cause of the explosion, why didn't survivors report any vertical uplifting of the ship? A mine exploding underneath would have lifted it. If there had been an external explosion, why wasn't there a large fish kill? Why wasn't debris from the mine recovered? And is it reasonable to believe such an act could be concealed for a century?

WILLIAM G. POHNAN, JR.
Streamwood, Illinois

As one of the authors of Appendix A of Admiral Rickover's book on the *Maine*, I wish to point out a critical piece of evidence, largely ignored. The fact that a portion of the outer bottom (Section 1) folded inward is considered by some to be evidence of a mine explosion. But it is generally agreed that the internal explosion that destroyed the *Maine* began in the six-inch reserve magazine. The inner bottom plating and framing under that magazine were extremely damaged, and some of that damaged structure was found within the fold of Section l, proof that the framing was damaged before Section l folded inward. The explosion had to start within the ship.

ROBERT S. PRICE
Burtonsville, Maryland

Australia by Bike, Part Two

As a geologist I worked on oil and gas field projects on the northwest shelf of Australia for over four years. Roff Smith writes about "the billion cubic feet of natural gas under the Timor Sea." The billion should read trillion. In fact, the entire shelf from Darwin to offshore Karratha holds reserves in the tens of trillions of cubic feet of gas; it is liquefied and shipped to Asia for electrical-power generation.

PETE CHIMNEY
Livermore, California

Like so many of my fellow Australians, most of whom live in crowded coastal cities sipping cappuccinos, I have had little experience in the outback. I've been to Belgium and Boston more times than I've been bush. Smith's remarkable journey almost inspires me to do the same.

IZZY PERKO
Sydney, New South Wales

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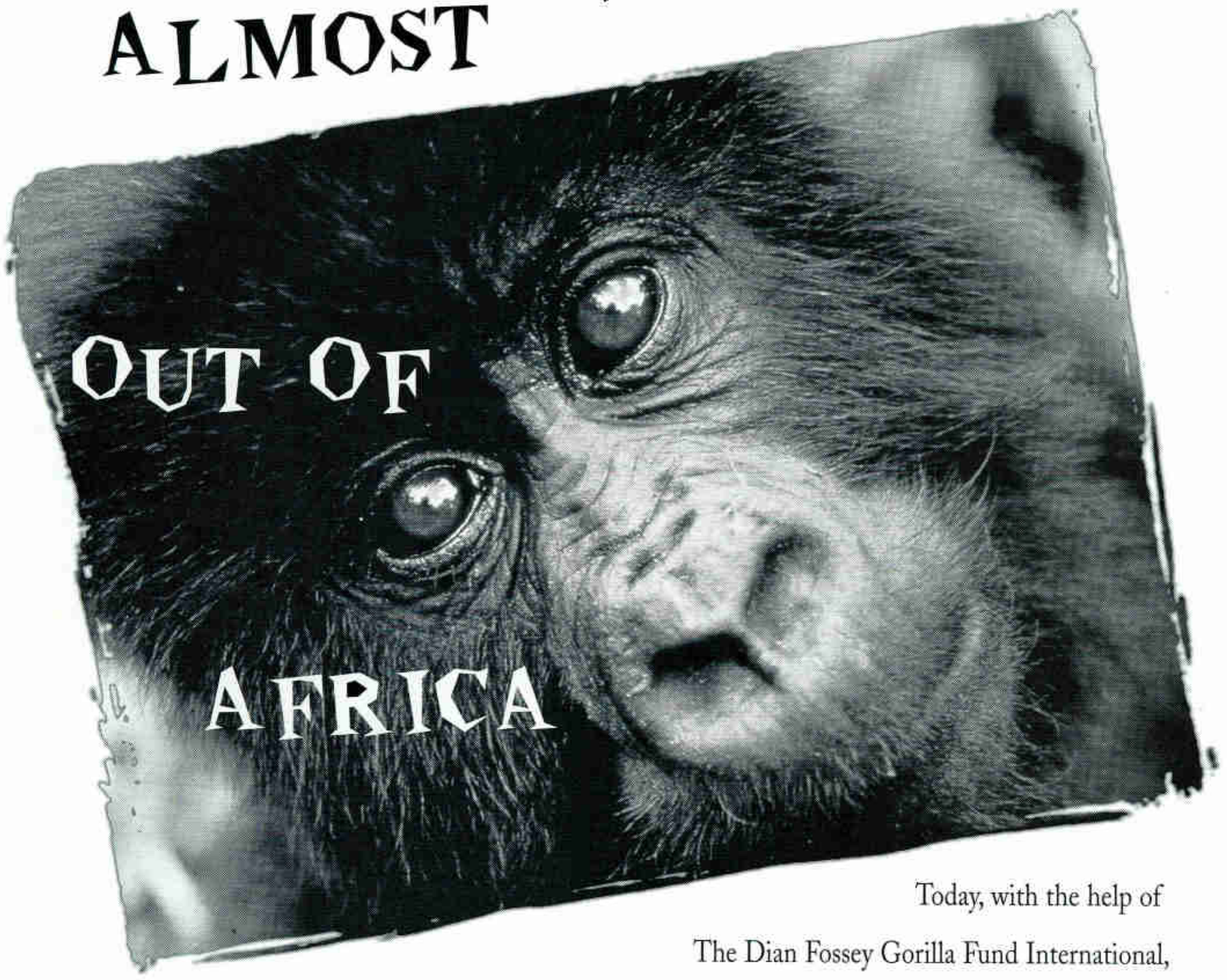
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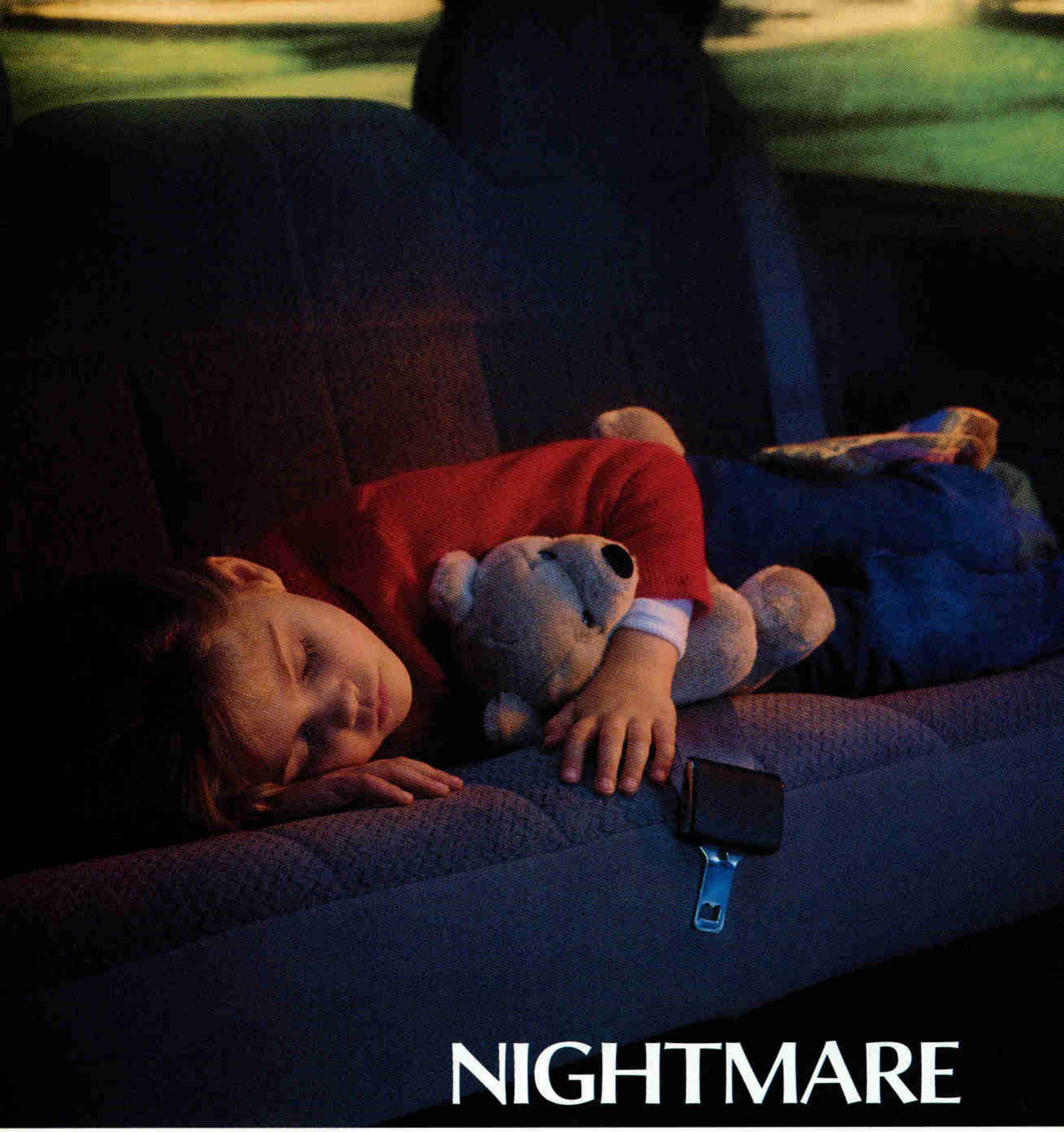


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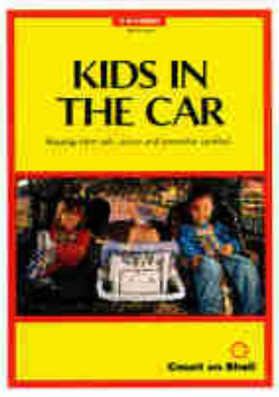
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JAMES A. SUGAR (BOTH)

Help Wanted: "Upkeepers" for Lighthouses

It takes two U.S. Coast Guardsmen (right) to clean the lens of Point Conception Light (above) west of Santa Barbara, California, a time-consuming chore that volunteers may one day handle.

Point Conception's tower was built in 1881. Its beacon—automated like all others in the U.S.—is visible 26 miles out to sea. The 52-foot-tall lighthouse is one of 13 in California that the Coast Guard hopes to turn over to nonprofit groups for upkeep but still keep in action as navigational aids. Most of the buildings are on the National Register of Historic Places.

"It's expensive to maintain lighthouses. They're in a harsh environment and need a lot of care," says Bill Gittler, lead property officer in the Coast Guard's Pacific command. Gittler hopes private groups will assume maintenance costs and chores at a time when his agency finds it difficult to fund the upkeep.

California is not the only place where the Coast Guard wants to get out of the lighthouse business. Fourteen Great Lakes lights no longer in operation are up for sale. Another 32 in Maine are being transferred to preservation groups by federal legislation.

Visage From Ancient Thrace

An image for the ages, a woman gazes down from the ceiling of the fourth-century B.C. burial chamber of a Thracian ruler in central Bulgaria. The one-room tomb, hollowed out of two granite boulders, contains more than 30 frescoes—animals, human figures, and floral designs—painted on the stone ceiling. This portrait is the best preserved, says archaeologist Georgi Kitov. The tomb is part of a larger funerary complex beneath one of the numerous mounds that dot the Valley of the Roses, heart of ancient Thrace. Coins bearing the likeness of Philip of Macedonia, who once controlled the region, helped date the tomb, whose construction, Kitov says, "is unparalleled" in the ancient world.



ZDRAVKO BAROV



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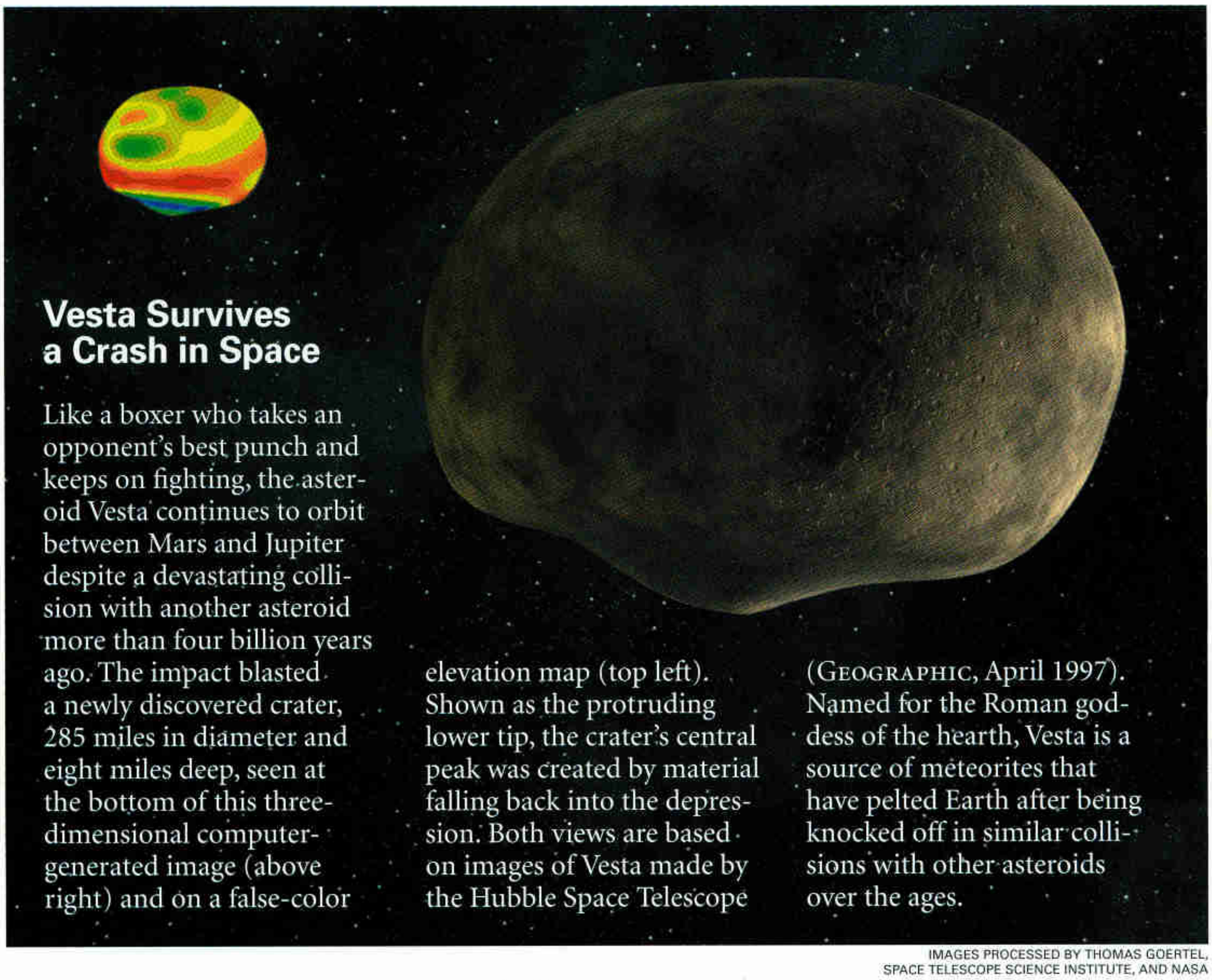


as birds flying south.

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Vesta Survives a Crash in Space

Like a boxer who takes an opponent's best punch and keeps on fighting, the asteroid Vesta continues to orbit between Mars and Jupiter despite a devastating collision with another asteroid more than four billion years ago. The impact blasted a newly discovered crater, 285 miles in diameter and eight miles deep, seen at the bottom of this three-dimensional computer-generated image (above right) and on a false-color elevation map (top left). Shown as the protruding lower tip, the crater's central peak was created by material falling back into the depression. Both views are based on images of Vesta made by the Hubble Space Telescope (GEOGRAPHIC, April 1997). Named for the Roman goddess of the hearth, Vesta is a source of meteorites that have pelted Earth after being knocked off in similar collisions with other asteroids over the ages.

IMAGES PROCESSED BY THOMAS GOERTEL, SPACE TELESCOPE SCIENCE INSTITUTE, AND NASA

Seeing Earth With a Starstruck Gaze

Imagine standing somewhere out in space, looking back at Earth's Northern Hemisphere through the stars. And imagine seeing them in the physical manifestations of their constellations.

That's the vision created by Andreas Cellarius in this map from *Harmonia Macrocosmica*, a 1660 collection of 28 astronomical maps. Compiled in the golden age of celestial mapping, the book holds the most lavish of all star charts. But historians of astronomy say it is of little practical use. "You get a sense of the transparent, starry world," says Anna Friedman of Chicago's Adler Planetarium. "But it's a high-level coffee-table book."

Little is known about Cellarius, rector of the Latin School in Hoorn, the Netherlands. Some of his charts embody the traditional Ptolemaic view, with Earth at the center of the solar system; others follow Copernicus's theory, then just over a century old, that the planets revolve around the sun.



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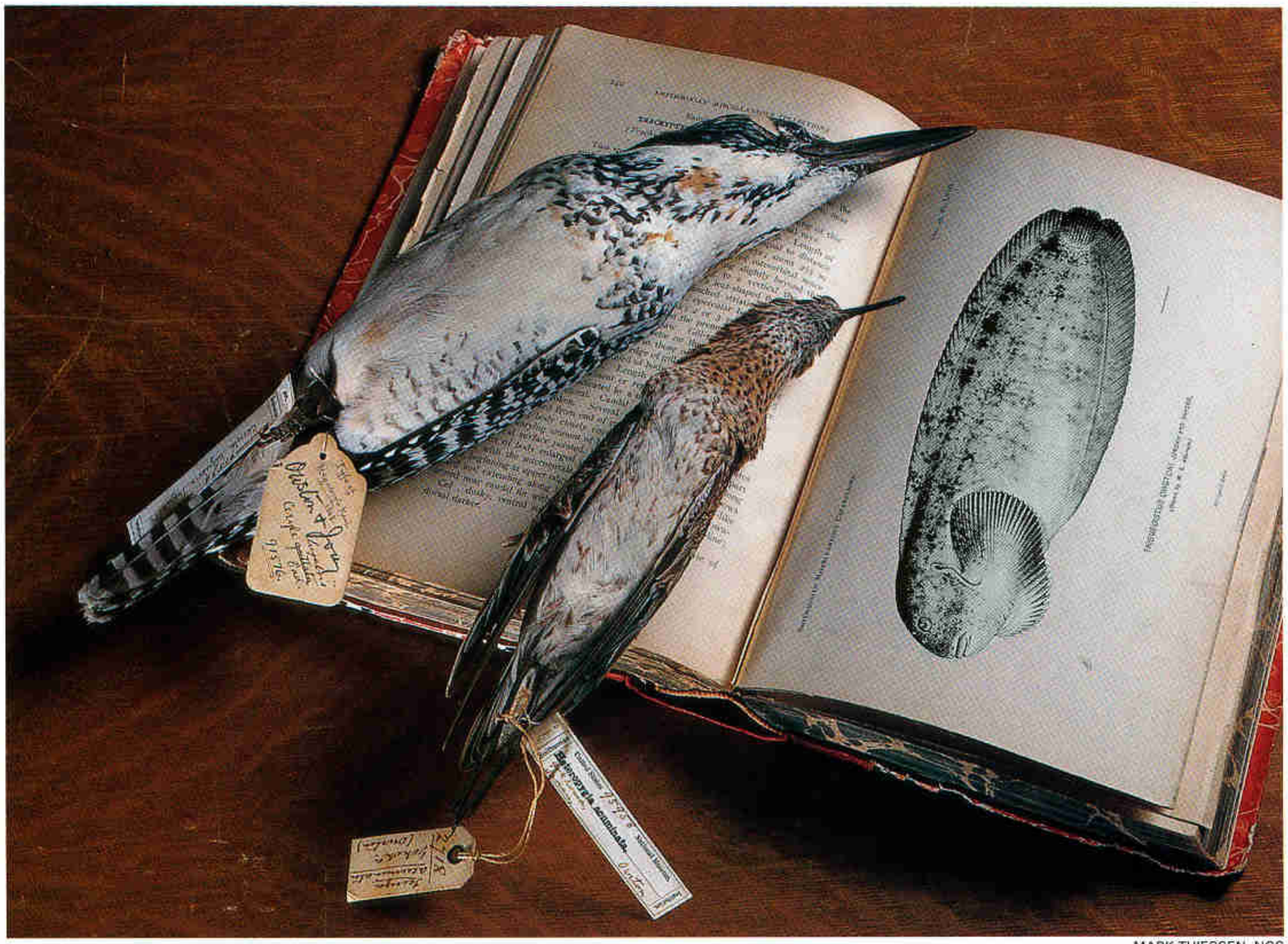


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MARK THIESSEN, NGS

Forgotten Collector of Asian Animal Life

He wasn't a scientist, but scientists of his day revered Alan Owston. One hailed the "prodigious number of bird specimens" he collected and added that "one need only look at the number of animals named after him" to gauge his importance. Another said his array of fish from Japan and China was known "as one of the most important collections of its kind." Yet he is almost forgotten today.

The English-born Owston moved to Japan in 1871 at the age of 18 and became a merchant and naturalist. He married a Japanese woman, helped found the Yokohama Yacht Club—one account says he owned its fastest yacht—and was buried in the foreigners' cemetery of that city after his death in 1915.

Henry M. Reiswig, a specialist in deep-sea sponges at the Redpath Museum of Montreal's McGill University, kept finding specimens collected by Owston in major museums. "They are immaculate, exquisite," he says. He took an interest in Owston and brought him to the GEOGRAPHIC's attention.



NATURAL HISTORY MUSEUM, LONDON

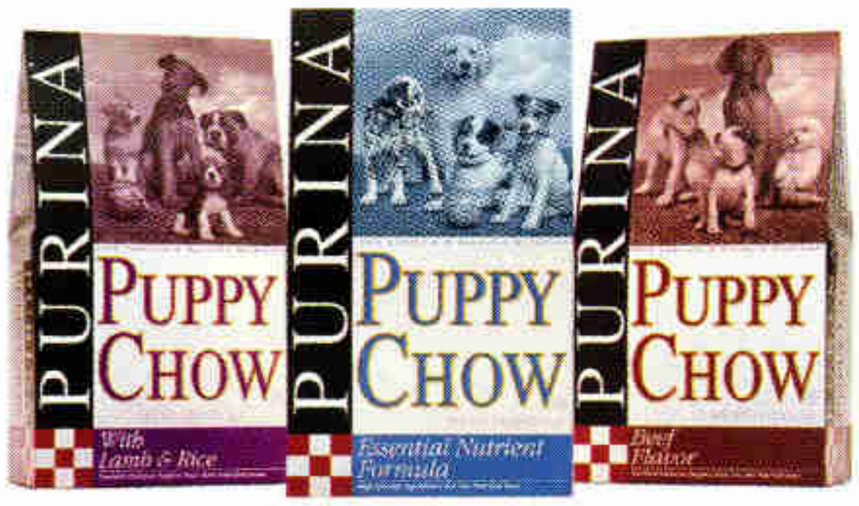
On land or on his yacht, the *Golden Hind*, Owston—seen at right with a giant sponge—collected voraciously and provided meticulous field notes. Pittsburgh's Carnegie Museum of Natural History acquired 1,364 of his Asian fish. The British Museum obtained his "splendid collection" of sponges. The Smithsonian Institution holds reptiles, fish, and birds, including the crested kingfisher and the sharp-tailed sandpiper (top) resting beside a 1903 illustration of a small fish he captured: *Trismegistus owstoni*. It joins a clam, a frog, a crab, a woodpecker, and other creatures named for the man who made them known to science.

TEXT BY BORIS WEINTRAUB



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Sorry. Michele Sanders can't talk right now. So she asked us to tell you about her Montero Sport. It's perfect for lugging all her mountain climbing gear. And it's as reliable as her dog, Blue. Although the Montero Sport hasn't chewed up her favorite shoes as of yet.

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NATIONAL GEOGRAPHIC

From the Editor

IN THE PAST THREE YEARS NATIONAL GEOGRAPHIC has gone truly international. Our Japanese-language edition is read by more than 300,000 people, and the first issues of our Italian and Spanish versions have virtually sold out. One reason the worldwide audience has embraced the magazine so enthusiastically is that we are decidedly universal in our selection of stories. We are as likely to cover a brigade of Arctic reindeer herders as a Burmese water festival.

Yet we remain a distinctly American publication, and it is with particular fondness that we approach U.S. subjects. In that spirit we initiated our Americana series, covering places, people, and events that help define our national identity. Past entries in the series featured historic Route 66 and county fairs.



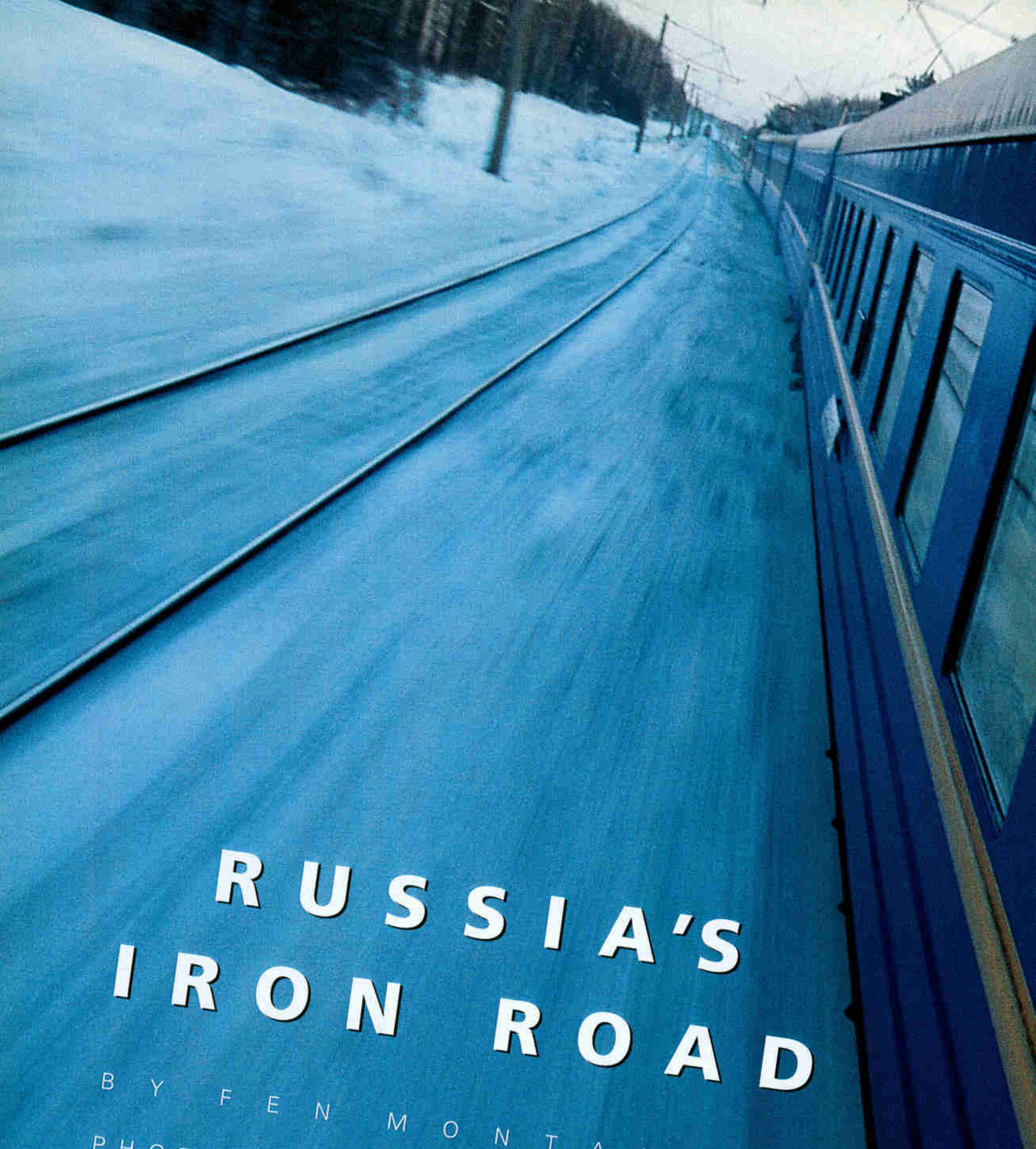


KINGMAN, ARIZONA, MOTEL SIGN, VINCENT J. MUSI; STOCK CAR, GAFFNEY, SOUTH CAROLINA, DAVID ALAN HARVEY; MINNESOTA DAIRY PRINCESSES, RANDY OLSON

Now, I realize there may be some grumbling out there about this month's Americana piece on the gritty world of stock car racing. I recall an article we ran a few years back, a wonderfully photographed, elegantly written piece about minor league baseball. It was a story far more about small-town America and striving for the American dream than about baseball. But the letters it prompted can be summed up thus: "If I wanted a sports magazine, I'd subscribe to one!" Well, before you write, do linger over David Alan Harvey's remarkable images and Peter de Jonge's heartfelt prose. Their story reveals the cadences of American life beyond the big cities.

After all, when you're dedicated to covering the world and all that is in it, you occasionally have to check out what's happening in your own driveway.

Bill Allen



A CENTURY-OLD MONUMENT TO THE TSARS' IMPERIAL WILL AND THE SOVIET UNION'S INDUSTRIAL MIGHT, THE TRANS-SIBERIAN RAILROAD—LIKE THE IMMENSE REGION IT SERVES—HURTLES INTO A FUTURE RENDERED PROFOUNDLY UNCERTAIN BY RUSSIA'S SOCIAL AND ECONOMIC UPHEAVAL. THE WORLD'S LONGEST RAILWAY BEGINS IN MOSCOW AND RUNS EASTWARD THROUGH THE URAL MOUNTAINS AND ACROSS ALL OF ASIA TO VLADIVOSTOK ON THE SEA OF JAPAN.



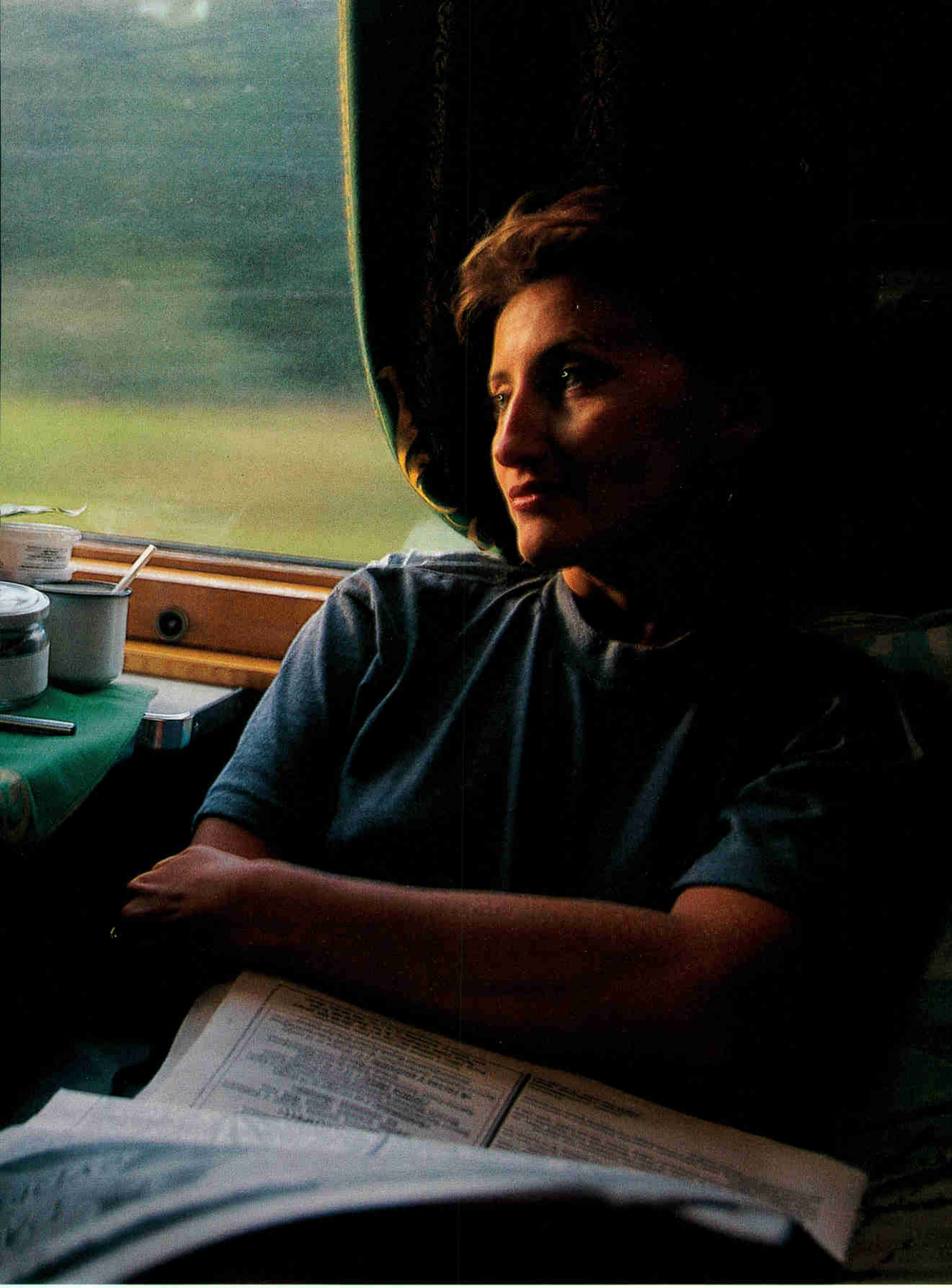
FORESTS DARKEN THE HORIZON east of Lake Baikal. "The strength of the taiga," wrote Anton Chekhov,



"does not lie in its giant trees and its silence, but in that only migrating birds know where it ends."



SAVORING A FIRST-CLASS MOMENT, Vladimir Ustimovich and Tatyana Petukhova travel to



Yekaterinburg. Today business success rivals political advancement as a route to the lush life.



TRAVELERS SCRAMBLE across tracks at Krasnoyarsk under a tangle of power lines connecting the railway



to massive hydroelectric dams, which poet Yevgeny Yevtushenko called "temples of kilowatts."



BUYING A TICKET demands patience (left). Separate windows serve pensioners, military personnel, and railway workers. On Moscow's Yaroslavskiy station platform (below) a conductor guarding against misuse of military discounts compares soldiers' passports with their tickets.

ON A SUNNY June afternoon Yaroslavskiy station is aswarm with travelers, hustlers, and hawkers from across the former Soviet empire. In the shadow of the station, a handsome prerevolutionary brick structure in central Moscow, passengers drag plastic sacks full of clothes and food across the dark asphalt platform. Gypsy women plead with passengers for spare rubles. Nearby, a phalanx of Russians stand behind low metal tables, selling hot dogs, bread, and fruit. Passengers, many clothed in cheap Chinese-made jogging suits, dip their sausages in ketchup and down bottles of Russian-made Baltika beer. In the swirling crowd a young woman answers her cell phone as a heavyset babushka looks on in wonder.

I drop my bags on the platform and take in the scene. In the air hangs the smell that, after years of working as a newspaper reporter in the Soviet Union, I have come to associate with Russian train travel: coal smoke. It emanates not from the locomotives, which are diesel or electric now, but from old-fashioned boilers used to heat water for tea, without which no self-respecting Russian would travel any distance at all. Whiffing the acrid scent, I begin to feel the pulse-quickening charge that comes at the start of a long voyage. And this *is* a long voyage: I'm heading across Russia on the Trans-Siberian Railroad, and if all goes well, I'll arrive five weeks and 5,770 miles later in Vladivostok, on the Sea of Japan.

Finding Train No. 2, the *Rossiya,* is not difficult. It's the only gaudy one at the station, sky blue on the upper half, red on the bottom—the signature colors of the Trans-Siberian Railroad's fastest train. Contrary to what you might think, the "Trans-Sib," as many Russians call it, is not a particular train, like the *Orient Express,* but rather a set of railroad tracks running east and west. Although many trains go east every day from Moscow, only one express, the *Rossiya,* makes the trip all the way to Vladivostok. If you boarded it at Yaroslavskiy station and stayed on, you would, the timetable says, reach the shores of the Pacific 6 days, 12 hours, and 25 minutes later.

Also on my platform is a corps of conductors, most of them female, dressed in grayish blue uniforms. At car number eight I hand my ticket to a sullen young woman with bleached-blond hair. Casting me the disdainful look of an ill-tempered bureaucrat, she stuffs the ticket into a small leather file and sends me onto the train with an abrupt nod of the head.

Twelve of the *Rossiya*'s 13 passenger cars are second-class, with four people to a



FEN MONTAIGNE wrote about Nenets reindeer herders in the March issue. His travel book *Reeling In Russia* will be published this month. GERD LUDWIG says that shooting from moving trains for this story was even more dangerous than covering Chornobyl and Soviet pollution (August 1994).



cabin. Jet-lagged and hoping for some rest at the start of my trip, I have chosen the first-class car, which has two beds in each of the nine compartments arrayed off the corridor. Inside my cabin it is dark and cool. The walls are lined with wood-colored plastic, the floor is covered in faux Oriental carpet, and the side table by the window is adorned with a maroon-and-white china teapot bearing the name *Rossiya*. A small television set (a perk later removed) is perched in the upper corner.

With a lurch the *Rossiya* pulls out of the station on time at 2:25 p.m. carrying 322 passengers—about 70 percent full. Within 30 minutes the dismal concrete-block sprawl of Moscow falls away, and we're riding through a classic Russian landscape of birch forests, wooden cabins, and an unbroken succession of vegetable gardens. We pass through the old city of Yaroslavl, picturesque with its green-domed churches, and after crossing the Volga River, the *Rossiya* turns east toward the Ural Mountains as the

Building a 5,770-mile railroad

Trans-Siberian construction began in 1891. By 1903 some 70,000 workers had moved 77 million cubic feet of earth, felled 108,000 acres of forest, and bridged half a dozen major rivers.



golden light of a summer evening spreads across the landscape.

I decide to drop in on the chief of the train, Valentina Aleksandrovna Chernova, and find her in a cramped compartment several cars ahead. A woman with gold-capped teeth and a frizzy head of blond hair, she is a 25-year veteran of the Russian railroads. She oversees the *Rossiya*'s 26 conductors and makes sure the train runs on time. Within minutes she is telling me that she misses the Soviet days, when the *Rossiya* left Moscow every day filled to overflowing and life on the railroad was stable.



MORE PASSENGERS AND FREIGHT are moved by train than by any other means of transportation in Russia. A train from Kharkiv in eastern Ukraine (above) travels much of its route to Vladivostok on Trans-Siberian tracks, which connect with other major lines.

SOLDIERS AND CIVILIANS await a twilight departure from Krasnoyarsk. The station also serves two



"secret cities," unmarked on Soviet-era maps, that produce plutonium and military electronics.



"It's frightening to live *now*. I don't understand it. There is poverty all around, yet there's all that money in this new stock market. Now we are in limbo."

TRAVELING across Russia on the Trans-Siberian Railroad is a journey of epic proportions. It's also a good way to gauge the mood of the people, and as I moved east, crossing seven time zones, I met scores of Russians like Valentina Chernova—resilient, fatalistic individuals caught in the shift of two worlds. While some Russians, particularly in the cities, are adapting to the new capitalist order, many more, stripped of the security that was a hallmark of the Soviet system, are angry and bewildered.

Experts say at least 6.4 million people are out of work; millions more don't receive salaries for months at a time.

Nothing symbolizes the present reality—the need for self-reliance—more than the vegetable gardens I saw from my window. Especially now, a thriving garden often means the difference between a full stomach and a growling one.

The upheaval has spread to Russia's railways and the Trans-Siberian *itself, leading* to a precipitous drop in traffic. The number of passenger trips nationwide fell from 2.7 billion in 1991 to 1.2 billion in 1997, the result of higher



CROWDING, BOREDOM, AND VODKA mixed with age-old ethnic hostilities "charged this communal car with silent tension," recalls photographer Gerd Ludwig. Nearing the Amur River some 4,000 miles and six time zones from Moscow, "train-lagged" passengers grow bleary-eyed and irritable.

ticket prices, less disposable income among the public, and a falloff in travel to and from the other former Soviet states. Freight has tumbled from two billion tons to less than one billion in roughly the same period.

Even so, it's striking how important trains still are in Russia. They carry half of all passenger traffic, compared with less than one percent in the U.S. And while about one-third of all freight in the U.S. goes by rail, in Russia it's more than 70 percent.

There is no transcontinental highway, so it's nearly impossible to drive from Moscow to Vladivostok except in winter, on ice roads that are infernally bumpy and often treacherous.

Although the once unshakable railway system is showing signs of decay—from rusty rolling stock to poor worker morale—it has hung on as a disciplined, centralized organization while nearly all other state-run enterprises, including the national airline, Aeroflot, have been privatized and chopped into pieces. The railroad ministry employs 1.5 million people, rivaled only by the armed forces, and still owns a vast network of schools, hospitals, and apartments. Workers refer to the railroads as "a state within a state."

The Trans-Siberian Railroad is the heart of the system, binding the enormous country together, just as Tsar Alexander III had envisioned in 1891 when he decreed that construction begin. An early foreign critic disparaged the railway as "rusty streaks of iron through the vastness of nothing to the extremities of nowhere." But the railway opened up Siberia's trove of natural resources—including timber, gold, and coal—and hastened the colonization of the great swath of territory between the Ural Mountains and the Pacific. By 1914 some five million settlers, mainly peasant farmers, had migrated on the railway from European Russia to Siberia.

MY FIRST NIGHT on the train I learned how persistent old Soviet attitudes can be: In my car the conductor, not the passenger, was king. I had expected a peaceful sleep, considering there were only four other passengers in the entire car, and at 10 p.m. I slid with relief between the starched sheets on my narrow berth. But I had the misfortune of being next to the conductor's compartment.

With little to do, she was holed up in her berth, smoking cigarettes in violation of train rules and playing a videotape at full volume. I was treated to a dubbed American action movie and the stench of cigarette smoke wafting through the vents in my door. Unable to sleep, I pounded on the wall, to no avail. Finally I could stand it no longer. I pulled on my pants and knocked on her door, asking her to turn off the movie. She shot me a poisonous look through a haze of smoke, then silenced the video.

Late the next afternoon, as the *Rossiya* moved into the low wooded hills of the Ural

"Although the once unshakable railway system is showing signs of

Mountains, I wandered down to the dining car, whose red vinyl booths were empty. The weather outside was overcast, the mood in the car gloomy.

All the same, Tatyana Viktorovna Zakharova, director of the restaurant car, greeted me with a smile, and we sat down in one of the booths. The bill of fare wasn't bad—vegetable soup, salad, goulash, and caviar were all available—and I chose tasty grilled chicken and mashed potatoes.

As I ate, I listened to Zakharova—another 25-year railroad veteran—lament the decline of her domain. Once, she said, the restaurant had sprawled over two cars, one for foreign tourists and one for Russians. Both groups reveled almost nonstop from Moscow to the Pacific.

"People were richer in the Soviet period," Zakharova said. "They traveled to resorts like the Crimea in summer. They came to our dining car with pleasure. We had to kick people out to make room for more customers. Now people come with vacuum-packed food and packages of Chinese noodles."

Zakharova plainly was romanticizing the Soviet period, when people were far from rich; they were, however, entitled to annual paid vacations in far-flung corners of the U.S.S.R. Train travel was so heavily subsidized by the state that ticket prices were absurdly cheap.

The number of foreign tourists on the Trans-Siberian has fallen too, in part, Zakharova speculated, because of the country's instability. Some are also wary of crime. Indeed, I've met several foreigners who were robbed in their sleep on the Russian railways.

When I'd traveled on the Trans-Siberian the previous summer, three women had tried to drug me, no doubt to steal my money. When I declined their glass of vodka (which I'd seen them doctor), they did everything but pour it down my throat. To get out of the booth, I'd had to shove one of the women aside.

At one point in our conversation, Zakharova told me to look out the window. To my right was a white stone obelisk announcing that we were 1,777 kilometers (1,104 miles) east of Moscow and had just crossed from Europe into Asia.

"I don't know when all this disorder will end," she continued. "It seems like everything has been forgotten, neglected. I'm simply ashamed of what's happening today."

IN HER MID-50S, Zakharova was hardly on the edge of economic ruination, but her disaffection was typical of her generation. There's a yawning generational divide in Russia today, and the younger people are adapting far more readily to the chaos—and opportunities—of the emerging market system. Valeriy Savitskiy, in the compartment next to mine, exemplified this.

Savitskiy, 33, earns up to $1,000 a month working for a company that imports spare parts for foreign cars, a booming business. Based temporarily in Warsaw, he has a wife and ten-year-old son living in Russia; his salary, 6.5 times the official national average, allows them to buy good food, clothes, and luxuries such as a VCR.

"It was all the same before," he said. "Everyone was more or less equal. Now someone with a head on his shoulders can live better if he wants. You feel improvement in the country now, without a doubt."

Savitskiy was making a routine trip to his company's headquarters in Perm, which takes him two days from Warsaw by train. I asked him why he doesn't fly. "It's terrifying," he said. "It's much safer on the train."

Certainly the safety record of Russia's airlines discourages many people from flying, and the roads are an arduous alternative to the train. But there's a cultural explanation as well. The pace of life in

decay—from rusty rolling stock to poor worker morale—it has hung on. . . ."

Russia hasn't ratcheted up to U.S. levels, and a two- or three-day train ride isn't yet considered an egregious waste of time.

SIX DAYS to cross Russia represents an exponential improvement over the situation a century ago. In May 1891, when Grand Duke Nicholas—who would become the last tsar—visited Vladivostok to inaugurate work on the Trans-Siberian Railroad, Russia's rail lines stretched eastward only as far as the Ural Mountains city of Tyumen. Siberia was connected to European Russia by the Trakt, a dirt road so bad it could easily take a year for travelers to reach St. Petersburg, the imperial capital, from the Pacific shores of the realm. Isolated outposts of Cossacks guarded the long borders with China. Japan was a growing threat. Tsar Alexander III, Nicholas's father, knew he had to tie his huge empire together. A railroad was the only answer.

Winding through some of the most inhospitable terrain in Asia, the railroad was a remarkable feat of construction, with an army of laborers, convicts, soldiers, and skilled foreign workers laying some 400 miles of track a year. In 1904 the first train traveled uninterrupted from Moscow to Vladivostok, partly crossing through Chinese territory. In 1916 a bridge across the Amur River at Khabarovsk opened up travel all on Russian soil, from one end of the empire to the other.

At no time has the railroad played a more vital role than during World War II, when hundreds of factories in European Russia were dismantled, placed on railroad cars, and shipped east of the Urals. Workers reassembled more than 50 defense plants in Novosibirsk, a somnolent town of a few thousand on the Ob River, which, as a result, grew into a major industrial center.

Some 2,000 miles out of Moscow, the *Rossiya* rumbled into Novosibirsk over the broad, muddy Ob, crossing a new bridge topped by a steel superstructure. The span rests on the same eight immense stone foundations that supported the first railway bridge, built a century earlier. I decided to make Novosibirsk my first stop because it is Siberia's largest city, with 1.4 million people, and the hub of commerce throughout the region.

Even a brief visit made it plain that Boris Yeltsin's economic reforms have left the city reeling. State orders for military goods and farm machinery have plummeted, and new production is stymied because factories across the nation confront a tangle of unpaid debts.

The giants of the city's military-industrial complex—including the Chkalov Industrial Aviation Factory, which made fighter planes, and SibSelMash, which once produced military vehicles and now turns out farm equipment—have laid off or furloughed more than half their workforce. Tens of thousands of people have lost their jobs.

The cutbacks are felt acutely in the Dzerzhinskiy area of eastern Novosibirsk, where beat-up orange trolleys rattle down poplar-shaded streets lined with concrete apartment blocks.

One afternoon I struck up a conversation with Yuri M. Maksimov. Now 51, he had put in 13 years as a metalworker at the nearby Chkalov factory, but he left two years ago after not having been paid for six months. Today he earns 500 rubles a month—about $85—sweeping up around a cluster of kiosks that sell food and alcohol.

"I never used to really think about tomorrow," Maksimov said. "But if they had told me back then that I, with my good hands and experience, would be sweeping courtyards in the future, I never would have believed them. I felt I was necessary

Babushkas load baby carriages with pans of home-cooked food and garden produce to sell at



Petrovskiy Zavod. Many struggle to supplement government pensions worth only about $60 a month.


КОМПАНИЯ
ДОПОЛНЕНИЕ К ОБЪЕДИНЕННОМУ
ЛУЧШАЯ ПОРА...
Страна для некурящих
С ТВОИМИ КОГОТКАМИ?
ВМЕСТЕ!
ТЕЛЕФОНОВ:
65-40-91,
61-62-63.

GATHERED FROM STATION KIOSKS and platform vendors, a feast of fresh milk and fruit, sausages, and smoked fish surrounds the ever present Russian teapot. Hungry for solitude, a rumpled reader (below) has escaped his cramped four-berth compartment for the relative freedom of a passageway jump seat.

to the government. Now, no one needs me."

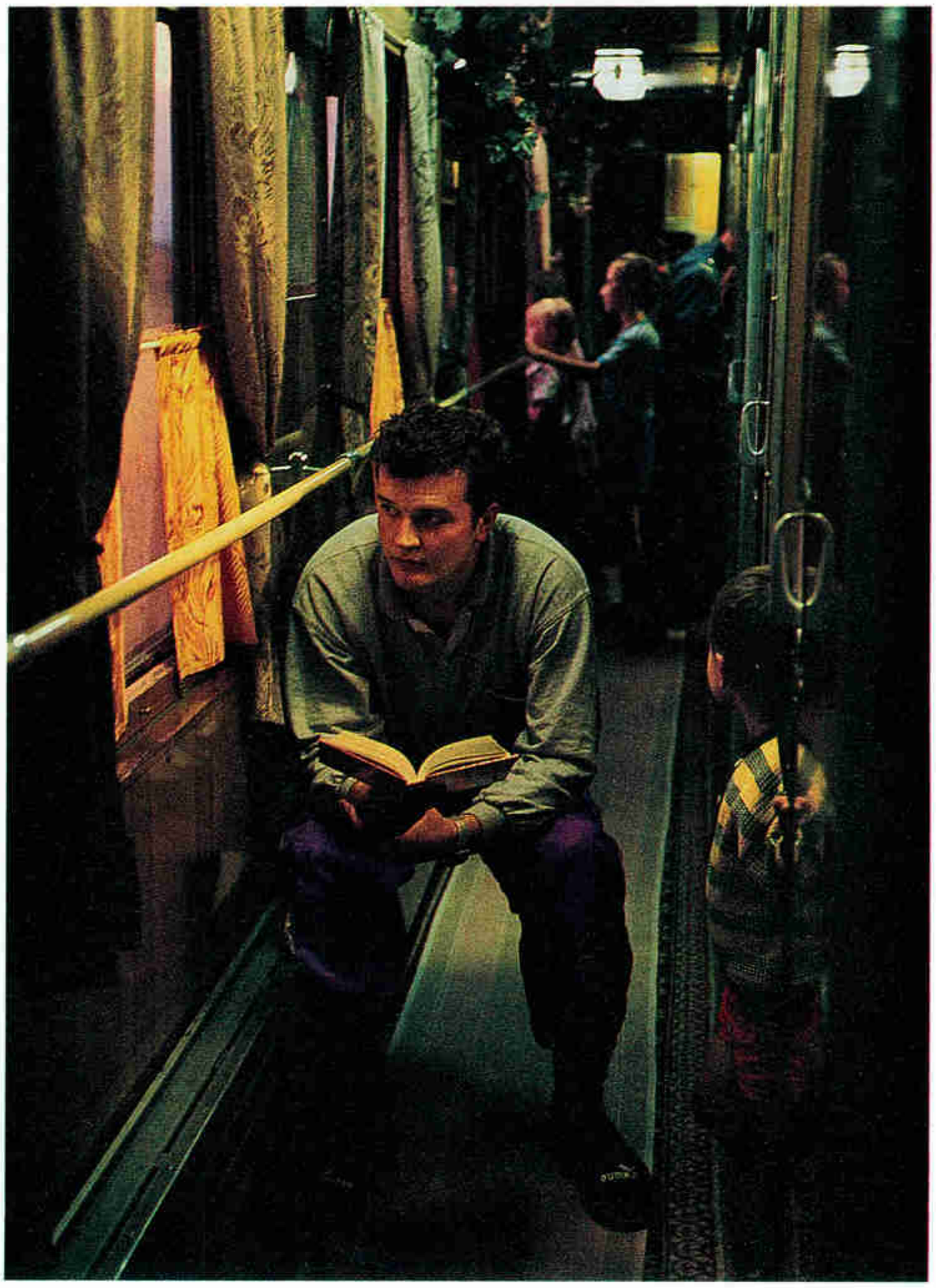
Further evidence of the troubles can be seen in the decline of freight and passenger trains passing daily through Novosibirsk, from about 200 in 1990 to 80 in 1997. Some international companies, particularly from Japan, have shunned the Trans-Siberian in favor of sea transportation because of soaring freight tariffs, theft, and an inefficient, corrupt customs service.

At the Kleschikha railroad freight station in the western part of the city, the news was mixed. Though overall traffic has plummeted, the number of containers shipped out has risen from 160 a month in 1994 to 230 in 1997. The bad news, according to Yuri V. Dushenin, the station chief, is that most of what is carted out is scrap metal from Soviet-era factories that are being dismantled.

"In Novosibirsk we don't produce anything anymore," said Dushenin, as he showed me containers stacked in the rail yard. "We send you in the West scrap metal, and you send us food. Heavy industry is being destroyed. It's not a pretty picture."

THE ECONOMIC DOLDRUMS in Siberia have forced many people to do what was once unthinkable. Tossed out of their jobs, or only occasionally receiving salaries, many Siberians have become street—or "shuttle"—traders, buying cheap Chinese, Turkish, and Polish goods in big cities and selling them in their hometowns. Novosibirsk is a center of this commerce, and hundreds of traders can be found at the city's green railway station, where they lounge on bulging sacks of clothing as they wait for trains home to Krasnoyarsk or Irkutsk.

On a cool Saturday afternoon I approached three middle-aged women resting on multicolored sacks the size of steamer trunks. Shuttle traders from Irkutsk, they come to Novosibirsk once a month to buy Chinese goods



"If the railroad falls apart, the state falls apart. We have such huge

at the *barakholka*, a bustling, dirty wholesale market on the edge of town. There they load up with $7.50 blouses, 70-cent socks, $12 jogging shoes, and $4 rip-off Fila and Reebok shirts, which they haul to Irkutsk to sell for a small profit. On each trip they spend a total of 72 hours in third-class train compartments and about 12 hours in Novosibirsk, returning to Irkutsk like exhausted pack animals.

"I'm forced to do this," said Nina Pushkareva, who quit her low-paying teaching job and began shuttle trading a year and a half ago. Her husband, a factory worker, is paid irregularly, and with prices for food, gasoline, and consumer goods approaching U.S. levels but salaries lagging ten times behind, this seemed the only way to help her family of four get by.

"At first it was embarrassing and unpleasant," Pushkareva said of the transition. "Now everyone accepts it. We know a lot of people who are shuttle traders, and generally they are a kind, well-educated group of women. They don't drink or smoke. In their own way the shuttle traders are a kind of intelligentsia."

Pushkareva has blue eyes, curly blond hair, and, given the rigors of her life, a remarkably cheerful disposition. "I really can't say I live better or worse than before—I just have to work a lot more." Then, reflecting a common belief that people's attitudes have changed too much to return to communism, she added, "One thing I do know: Whether we like it or not, we can never go back to the old system."

MOVING ON AGAIN, after a whistle-stop visit to Krasnoyarsk on the banks of the Yenisey, I boarded a third-class car to see what Pushkareva has to endure. The stench of body odor and disinfectant greeted me as I entered the open car, which sleeps 54 passengers—three times as many as first class—but which, thankfully, was only half full. The sleeping berths were stacked close together, the linoleum floor was bare, and the white linoleum tabletops were scarred from countless knife blades.

As the evening drew on, some passengers turned in, crawling fully clothed under their rough blankets. Others sat on the hard benches in the dimly lit car and devoured suppers of sausage, hard-boiled eggs, onions, tomatoes, cucumbers, and bread.

It was a relief to pull into Zaozernyy, population 19,800. The town is in the heart of the area U.S. Army Maj. Gen. Adolphus W. Greely, the last person to write an article about the railroad for NATIONAL GEOGRAPHIC, predicted would become "one of the great grain-growing centers of the world."* What I found almost a century later highlights a paradox of contemporary Russia: Few people have greener thumbs than the Russians, yet nowhere in the developed world is agriculture in sorrier shape.

Viktor Resheten, a local newspaper reporter, offered to show me around. After spending most of the day touring decrepit collective farms, we turned onto a dusty track that ran along the railroad. In front of us, thrown into sharp relief by the slanting evening light, was a homestead nestled between the tracks and a sloping field. A mother and daughter, who were tending a herd of about 50 goats, eyed us with concern as we stopped outside their log home, with its dilapidated wooden outbuildings.

A gate in the fence around the house swung open, and a man approached us. He wore dirt-smeared clothes, had a long brown beard, hollow cheeks, and brilliant blue eyes in a tanned face. Inviting us to sit on a bench, the man too was wary. We soon found out why: He and his family were farming land to which they had no legal claim.

* "The Land of Promise," November 1912.

distances to cover in Russia, and only the railroad can do that."

The man's name was Aleksey Ivanovich Mosulesny, and he said he had been forced into subsistence farming in 1995 when the government pig farm he worked for went bankrupt. Mosulesny, his wife, and three children, ages 15 to 22, run a modest operation, keeping four pigs, a cow, and a horse as well as the goats. They live off what they raise, earning money for staples by selling meat and milk in the Zaozernyy market.

"I am tied to nobody—we live on our own resources," said Mosulesny, who had the gaunt look of a frontiersman. "I like my independence, but it would be better if what I was doing here was all legalized." He was referring to a muddled Russian system that still officially outlaws the sale of farmland and makes leasing difficult.

I told him about Greely's impression that prerevolutionary Siberia was a land of boundless potential settled by "men and women in the flush and vigor of life." When I asked him if he thought such a class of farmers could be revived, he looked at me as if I were daft. "I don't think about what was before the revolution," he said. "I'm just trying to survive."

The next day Resheten introduced me to one of the spiritual heirs to the peasants Greely had so admired. A powerfully built man in his mid-40s, Grigory Nigoda grows wheat and rye on 270 acres he leases from the local government. Greeting me in front of the white wood-frame house he built with his own hands, Nigoda showed me the two tractors and combine harvester he'd acquired in five years of farming as an independent.

"I got this one at the Minsk tractor factory," he said. "To save money, I drove it back here myself, averaging 40 kilometers an hour. It took me 11 days."

That kind of determination has helped him stay afloat. Although he is one of the most successful farmers in the region, he says his operation is just a step above subsistence level. Over a massive lunch of sausages, fried eggs, blini, and vegetables from his garden, Nigoda told me that, with some help from the government and a stable market, he could expand his production fivefold. He dreamed of handing down a thriving farm to his daughter, son-in-law, and son, now 18.

"When something's your own, your roots are sunk deep, and shoots spring up around them," Nigoda said. "That's what holds things together."

Holding myself together was a challenge on the local trains to Irkutsk. On the first one, a conductor showed me to a four-berth compartment where three men filled the stifling, sour-smelling cubicle with deafening snores. Judging by the empty vodka bottles and scraps of food, the men had been on a binge. Giving up on sleep, I got off at Tayshet, a dismal rail junction of ramshackle Stalin-era buildings and dusty, potholed streets. After a brief tour of the town, once a transfer point for prisoners being ingested into the Soviet gulag, I boarded another train.

Southern Siberia was in the throes of a heat wave, with temperatures in the low 90s. Desperate for a breeze, I joined a dozen other passengers by the open windows in the corridor, and in a heat-induced stupor we gazed at the hilly taiga, thick with birch and fir trees. From time to time we passed a run-down lumber mill with logs scattered around it.

About 9 p.m. we pulled into the town of Nizhneudinsk. There, as at many stations, peddlers strode alongside the cars, selling beer, smoked fish, sausages, boiled potatoes, and bread. The train moved on as a vivid orange sunset lit up the sky behind the forested hills. Around midnight I finally fell asleep to the rhythmic *da-da-da-dun, da-da-da-dun* of wheels on rails.



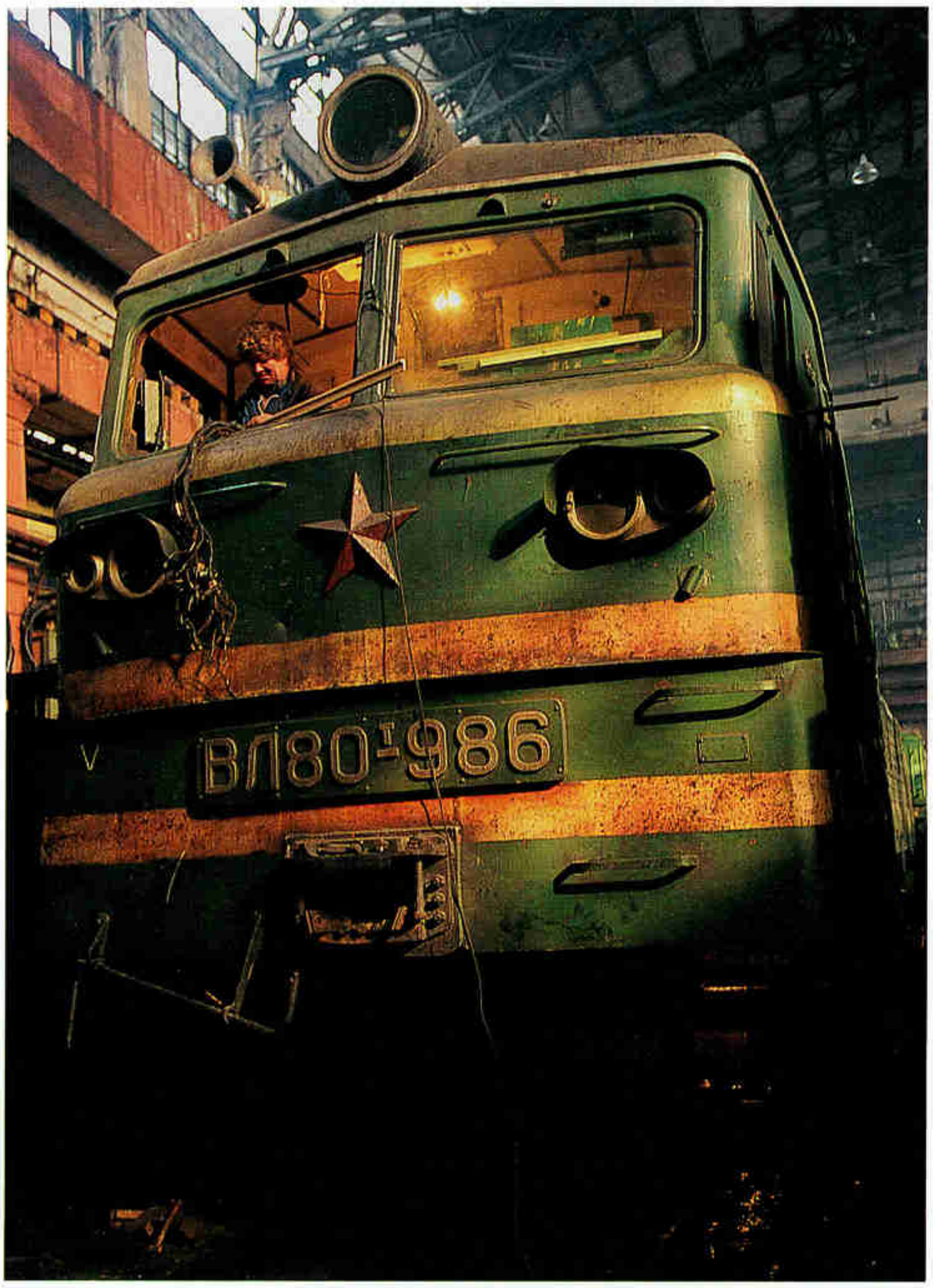
STATE WITHIN A STATE, Russia's railroad ministry controls 400,000 pieces of rolling stock, 1.5 million workers, a million phone lines, 64 colleges and universities, and 400 hospitals. Factories at Krasnoyarsk and Ulan Ude (left and below) refurbish passenger cars and overhaul electric engines.

AFTER THREE WEEKS and several thousand miles of listening to so many Russian tales of woe, Aleksandr P. Kolmakov was the antidote I needed. It was fitting that I met him in Irkutsk. This city of 587,000, founded in 1661 on the banks of the Angara River, was known in the early days of the railway as the Paris of Siberia. As raucous as it was prosperous, Irkutsk had a large number of nouveau riche gold magnates, fur traders, and merchants, who lived in stately stone and brick homes, many of which are still standing. After amassing their fortunes, some of Irkutsk's grandees turned their attention to doing charitable works—building the libraries, schools, orphanages, and churches that formed the heart of the city's cultural and educational life.

Kolmakov, a 43-year-old half-Russian, half-Gypsy, is in the mold of these businessmen. Fed up with the ostentatious consumption of other New Russians, he is guided by the ideal of doing good works—and bringing honor to his family name.

Such altruism is a rarity today in Irkutsk, where, according to the police and local press, many of the city's tycoons are either mobsters, racketeers, or nefarious entrepreneurs who make their money plundering the assets of Soviet-era factories. The ill-gotten gains of these men, who can be seen roaring down Irkutsk's streets in BMWs and Toyota Land Cruisers, customarily end up in Swiss bank accounts, not local charities. Kolmakov himself acknowledged that it is impossible to do business in the city without making peace with organized crime bosses, although he has refused to pay protection money.

Kolmakov has the build of a bull and the manners of a gentleman. No more than five feet eight inches tall and weighing two hundred pounds, he looks every bit the boxing champion he once was, with a large head, close-cropped black hair, dark





TRAINS DON'T EVEN PAUSE in Svishchevo, so locals like Vladimir Maltsev rely on horse-drawn sleighs to get around. Far from the ocean's climate-moderating effects, this tiny central Siberian village receives snowfalls so deep that even Vladimir's horse Vanya—a sturdy beast—gets mired in the drifts.

eyes, and a prominent brow.

When Mikhail Gorbachev assumed power in 1985, Kolmakov was an official with a large state-owned construction company. Taking advantage of his connections and a new law allowing small private businesses, he went out on his own, slowly expanding his construction firm into one of the largest businesses in the city. In recent years the firm—named San Roma for his sons Sanya, 22, and Roma, 14—has acquired a lumber mill and several restaurants.

"I want to invest here in the Irkutsk area," said Kolmakov, sitting behind the wheel of his gray Mercedes 500 sedan, as we took a six-hour tour of his empire. "If I earn a kopeck, I want to put it here. You have to spread money around so it grows like mushrooms, and then I think you find real satisfaction in life." As I saw, Kolmakov's money has seeded an impressive array of offices, apartment houses, and a factory or two.

Kolmakov dreams of reviving Irkutsk's prerevolutionary *kupechestvo,* or merchant class, including the tradition of giving abundantly to charity. Consequently he has set out to make a name for himself as one of the city's more beneficent citizens. He hosts dinners for the elderly, World War II veterans, and orphans and donates money to the local hockey team. "I want to share a little," he told me. "I want to leave something behind, to see that I've made a difference."

He has focused much of his largesse on the tiny hamlet of Nikola on the Angara River, where it flows out of Lake Baikal. Nikola, which has a stunning view of the lake and the snow-covered mountains on its eastern shore, struck him as such a prime spot that he decided to eventually build a hotel, restaurants, and a spa there for Russian and foreign visitors. He began with a revitalization program aimed at convincing the several hundred residents that their lives would improve under his influence.

Kolmakov pointed out his works in progress: Here was the frame of a new church, there a new store, over there a planned soccer field, and farther away, a hundred yards from the river, a summer camp for children. In addition he distributes free food to the 50 pensioners in the village and supplies them with firewood. As hoped, Nikola's residents now regard him not with suspicion but with appreciation.

"Of course we think well of him," said Tatyana Sherbula, 61, who cooks for Kolmakov at a small guesthouse. "He's only improving things. We're very satisfied."

WITH A DEAFENING HISS, Aleksandr Demakov released the brakes on the 1950s-vintage, 136-ton, 4,000-horsepower locomotive, easing his green monster out of Irkutsk station. Demakov, who has worked 27 years for the railroad, was at the helm of Train No. 250, pulling 19 passenger wagons weighing 62 tons apiece toward Blagoveshchensk on the Chinese border. A taciturn man with a flushed face,



Demakov—baking in the hundred-degree cabin—was furiously wiping his brow. The control panel, with its few dozen dials and toggle switches, bore layers of gray paint, cracked and bubbling signs of long service.

Lumbering along at 30 miles an hour, we narrowly missed several people who darted in front of the train. Astonished at their recklessness, I asked Demakov and his deputy, Aleksandr Fomin, if they ever hit pedestrians.

"Ask him," replied Fomin, nodding to the engineer. "He's run over a lot of people." At first I thought he was joking. But Demakov was not smiling.

"You've hit a lot of people?" I asked.

"A lot," said Demakov. "Mainly on holidays, when they've been celebrating."

As the train skirted the southeastern shore of Baikal, I was treated to a sublime view of the lake at sunset, ringed by mountains and bathed in soft pink light.

For the next 36 hours we clattered through the Transbaikal region and into the Russian Far East. The terrain grew hillier, wilder, and even more thickly forested with birch and pine. At higher elevations we passed through meadows carpeted with yellow, purple, and red wildflowers. In the valleys of the Ingoda and Shilka Rivers

A WESTBOUND EXPRESS carries Olga Goncharova and her daughter, Darya. Hugging the rails,



Siberia's population is several times denser along major train routes than elsewhere in the region.

END OF THE LINE: Trans-Siberian tracks meet the historic Vladivostok station (right), built on waterfront now home to commercial vessels and the Russian Navy's Pacific Fleet (below). Rails moving people and goods across Siberia's vast spaces remain critical to Russia's future.



hundreds of villagers were bent over in the timeless pose of Russians working the soil, weeding their gardens.

WHEN I GOT OFF the train at Yerofey Pavlovich, a godforsaken collection of log cabins and barracks-like apartments deep in the taiga, I was reminded of something the train driver had said. "If the railroad falls apart, the state falls apart. We have such huge distances to cover in Russia, and only the railroad can do that."

Named for a 17th-century Russian explorer, Yerofey Pavlovich grew up in the early 1900s as a supply and maintenance station for the Trans-Siberian. But the number of trains passing through has fallen by two-thirds since 1990, and the 6,600 townsfolk are unstrung. At the depot that services freight cars, the workforce has been pared from nearly 450 to 270, a reduction that mirrors recent cutbacks throughout the Russian railroad ministry.

The town has a moribund air. Its streets, once paved, are cratered. Dogs nose through trash on vacant lots. A half-ruined lumber mill sprawls over one corner of town, many of its buildings burned or stripped by vandals.

"Half of Yerofey Pavlovich is not working," said Anatoly Latyshev, 39, who was standing on an oil-blackened floor in a cavernous repair shed for rolling stock, his hands, face, and clothes smeared with grease. "They could decide to close this depot soon. We never used to think about these things, and now any day you could come to work and find you're out of a job.

"Earlier we built things," he said, scraping thick, black grease off the axle of a huge tank car and flinging it into a pan. "Now everything is disintegrating. If it was better somewhere else, I'd go. But where?"

The old rail system for which Latyshev pines existed only because of a stunningly inefficient communist economy that moved huge amounts of freight with little regard for cost. Today the government can no longer subsidize such activity any more than the ministry can afford to employ armies of workers.

"These are all temporary difficulties," Boris Lapidus, the chief of the economics department at the Russian railroad ministry in Moscow, had told me. "We keep maintaining our railroads and preparing them to carry more people and more cargo."

AFTER CROSSING most of Siberia on slow local trains, sleeping in cramped compartments, I decided to end my voyage in grander style. At Khabarovsk, an industrial city on a picturesque stretch of the Amur River, I boarded a first-class car on the *Okean* (Ocean), which leaves at seven in the evening and arrives in the famed port of Vladivostok at nine the following morning.



A conductor showed me to a one-berth compartment with white curtains on the windows and a red velvet-like cover on the narrow bed. As we crossed a patchwork of fields and forests, I could smell diesel fumes from the locomotive, a reminder that most of this 470-mile stretch of the Trans-Siberian is still not electrified.

Sitting in my quiet compartment, I drank a beer and relished my last hours on the train. At the small town of Vyazemskiy, women wearing colorful head scarves stood in front of the train station selling cherries, strawberries, cakes, and fresh milk. Overhead a crescent moon hung in an ice blue sky.

In the morning, when we pulled into Vladivostok, it was cool and overcast. From my window I glimpsed the sheltered harbor, flanked, in Greely's words, by "green and graceful hills." The breathtaking setting was marred by ubiquitous concrete apartment blocks—deposited on the hills in Soviet times—which house many of the city's 654,000 people. Dozens of ships, including several warships from Russia's Pacific Fleet, lay at anchor in Golden Horn Bay, evidence of Vladivostok's importance as Russia's gateway to the Pacific.

Vladivostok station, which has recently been restored, is a compact yellow stucco building with arched windows, high ceilings, meticulous tile work, and iron filigree on the roof. A new bronze column stands on one of the brick platforms, topped by a two-headed eagle, the now revived symbol of tsarist Russia. A plaque at the base of the column reads, "Here Ends the Great Trans-Siberian Railroad. Distance from Moscow: 9,288 km."

I wandered around the station, searching for vestiges of the beginnings of this remarkable railroad. In May 1891 the young Grand Duke Nicholas had laid the first stone of the station, and a commemorative plaque had been placed in its foundation. I had seen an old photograph of the plaque and had heard that decades ago it was visible. But at the gleaming, refurbished station, railway officials hadn't a clue as to its whereabouts. "Somewhere under the station," they said.

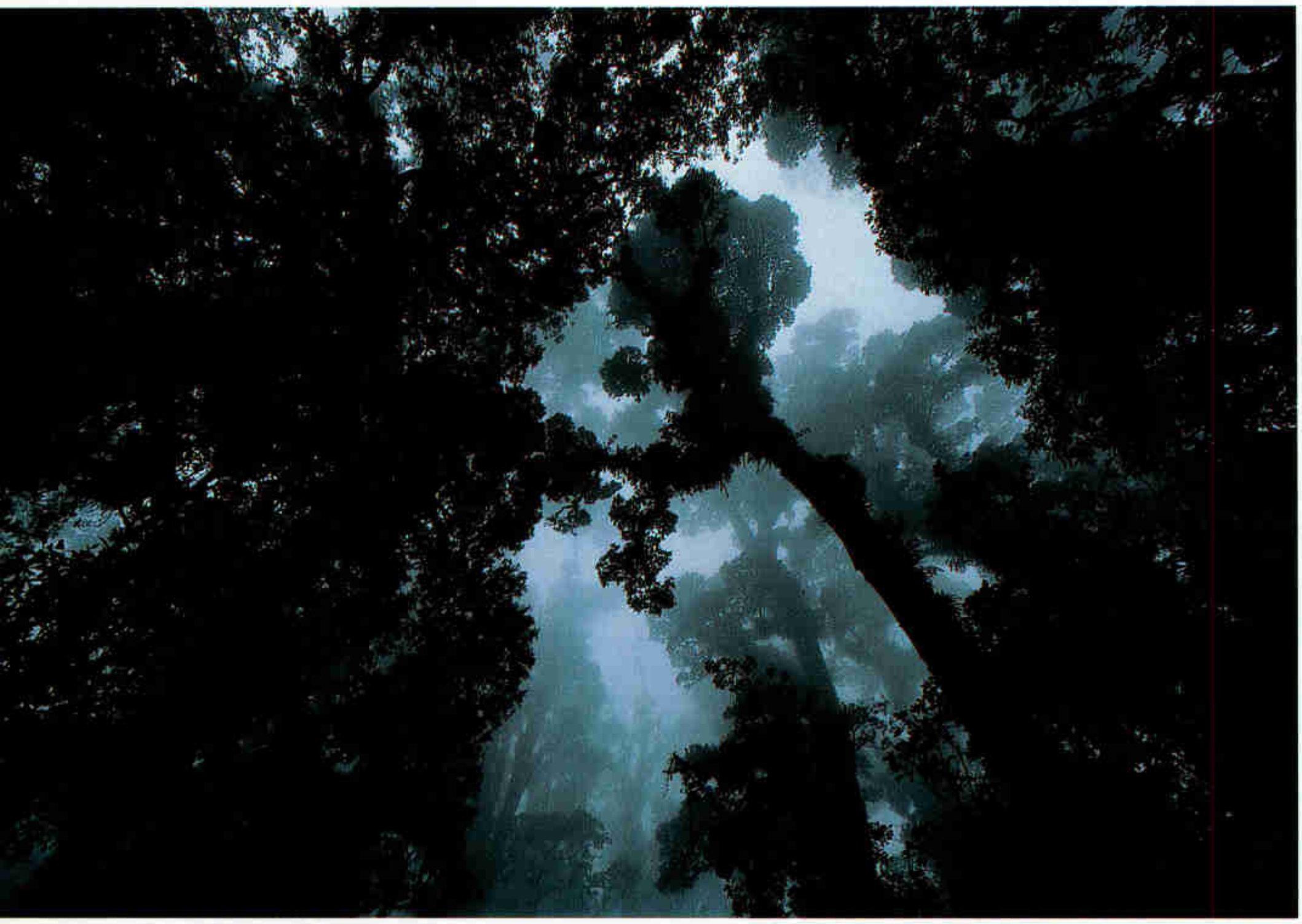
I scoured the base of the building for signs of the grand duke's plaque. But the officials were right. Like much of old Russia, it was gone. □

The Elusive QUET

ZAL

Article and photographs by STEVE WINTER

Shimmering feathers of a male resplendent quetzal reach far beyond the nest he and his mate hollowed out of a tree in Guatemala. Breathtaking glimpses of this celebrated and threatened bird are becoming increasingly rare as human encroachment reduces its numbers.



MIST-SHROUDED FOLIAGE *of Middle America's cloud forests makes up the nesting habitat of the resplendent quetzal, one of the Western Hemisphere's most magnificent birds. Silhouetted on a branch festooned with air plants, a male displays feathers that can reach three feet in length.*

In the pantheon of ancient Mesoamerica towered Quetzalcoatl—the Feathered Serpent that bestowed corn on humankind. The plumage of this god was that of an equally esteemed bird. Symbols of wealth, status, and agricultural abundance, resplendent quetzal feathers crested the headdresses of Aztec and Maya rulers. Throughout the realm, quetzal feathers were given and accepted as precious tribute. Feathers were plucked from trapped quetzals, which were then released to grow new ones. Killing a quetzal brought a death sentence.

Homage to this iridescent bird endures in the name of the Guatemalan monetary unit, the quetzal. Yet the bird's population is in crisis throughout its Middle American range. The first blow came in the 19th century, when stuffed quetzals were shipped to European admirers. Today conservationists struggle to save the bird's habitat, which is falling to cropland, cattle pasture, and logging. But the quetzal's hold on the Mesoamerican consciousness has not dimmed. Maya villagers I met later in Belize, outside the quetzal's territory, pumped me for stories of my fieldwork: "You've seen one?" they asked. "They're still alive?"

An interest in conservation led Steve Winter into natural history photography.





AN EXPLOSION OF COLOR *brightens the forest when a resplendent quetzal ventures forth in search of food. Small avocado-like fruits form the bulk of an adult's diet; nestlings are also fed insects, lizards, and frogs. During flashy spring courtship displays the*



male flies straight up from the crowns of hundred-foot-tall trees, circles in song, then rockets down, his train streaming like a comet's tail. Tourists traveling to Middle America's wildlife reserves cross their fingers for a chance of sighting this bird, a solitary creature outside of its breeding season.



ROLLING CLOUDS *blanket the chill heights of Sierra de las Minas Biosphere Reserve in Guatemala, prime quetzal habitat. Created in 1990 and covering 584,000 acres, the reserve spans elevations from 50 to 10,000 feet and includes about 60 percent of the nation's remaining cloud forest.*



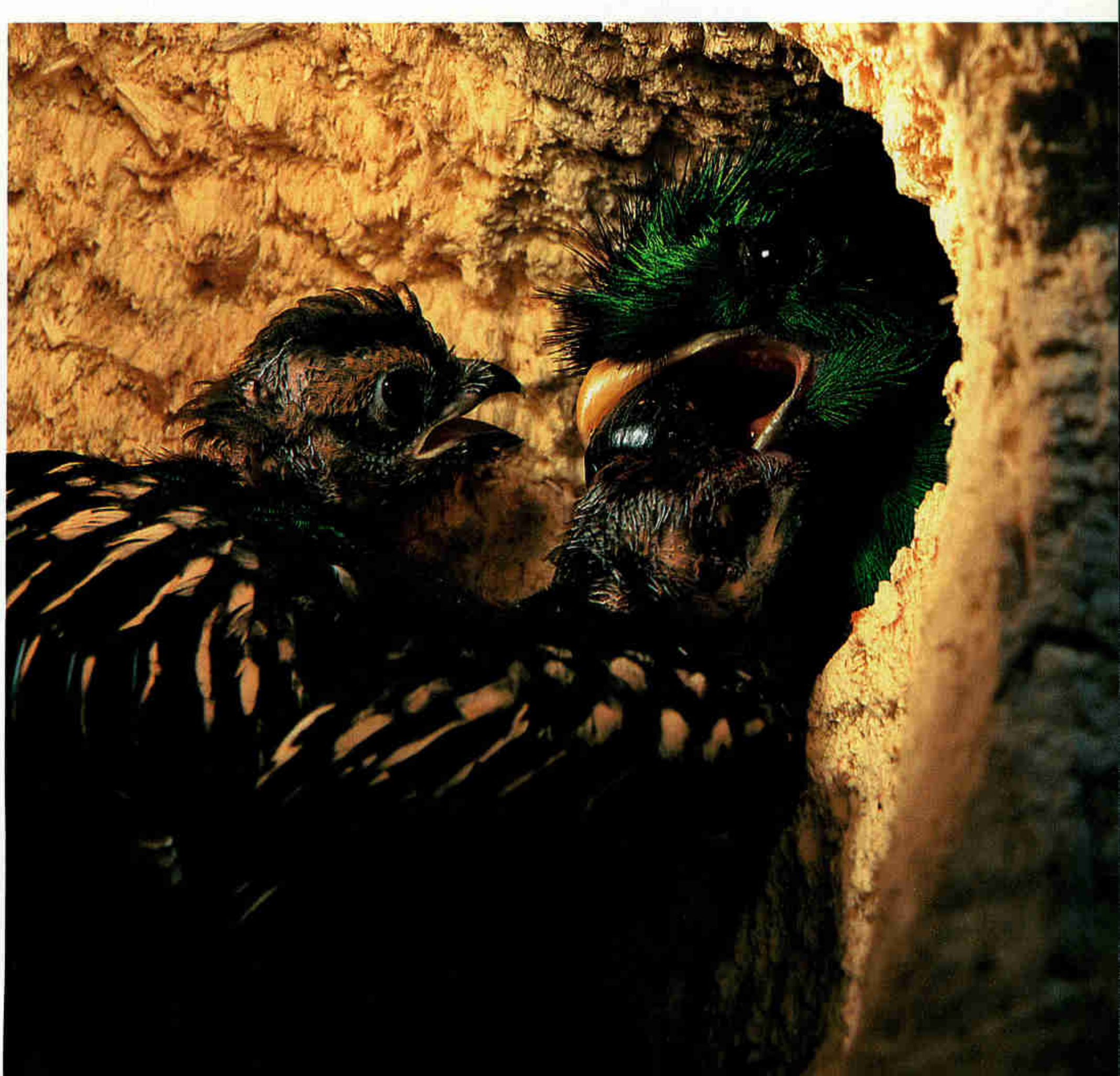


BIRD OF TWO HABITATS, *the quetzal migrates vertically between cloud forest and mid-slope altitudes, rather than north to south. The highlands where quetzals nest are either protected or inhospitable to the agriculture and logging that are eating into the birds' mid-slope range (art). In Sierra de las Minas naturalist Juan Carlos Mendez and biologist Marie-Claire Paiz of Defensores de la Naturaleza equip a male with a custom-made backpack radio transmitter to identify critical migratory habitat and set conservation priorities.*





FAITHFUL FATHER *brings fruit to his nestlings (left). The day before they fledged, I watched them squabble over another delivery (below), holding my lens to a hole cut in the side of the tree. Quetzal parents take turns incubating and feeding their young; there's not room in the nest for two adults. Distressed by predatory squirrels and toucanets, this female (above) tried to enter with her mate still inside. In contrast to males, females have dun-colored heads and only a splotch of crimson on their abdomens and lack elaborate plumage. Equipped with relatively weak beaks, quetzals carve their nests in dead trees, anywhere from 3 to 50 feet above the ground.*





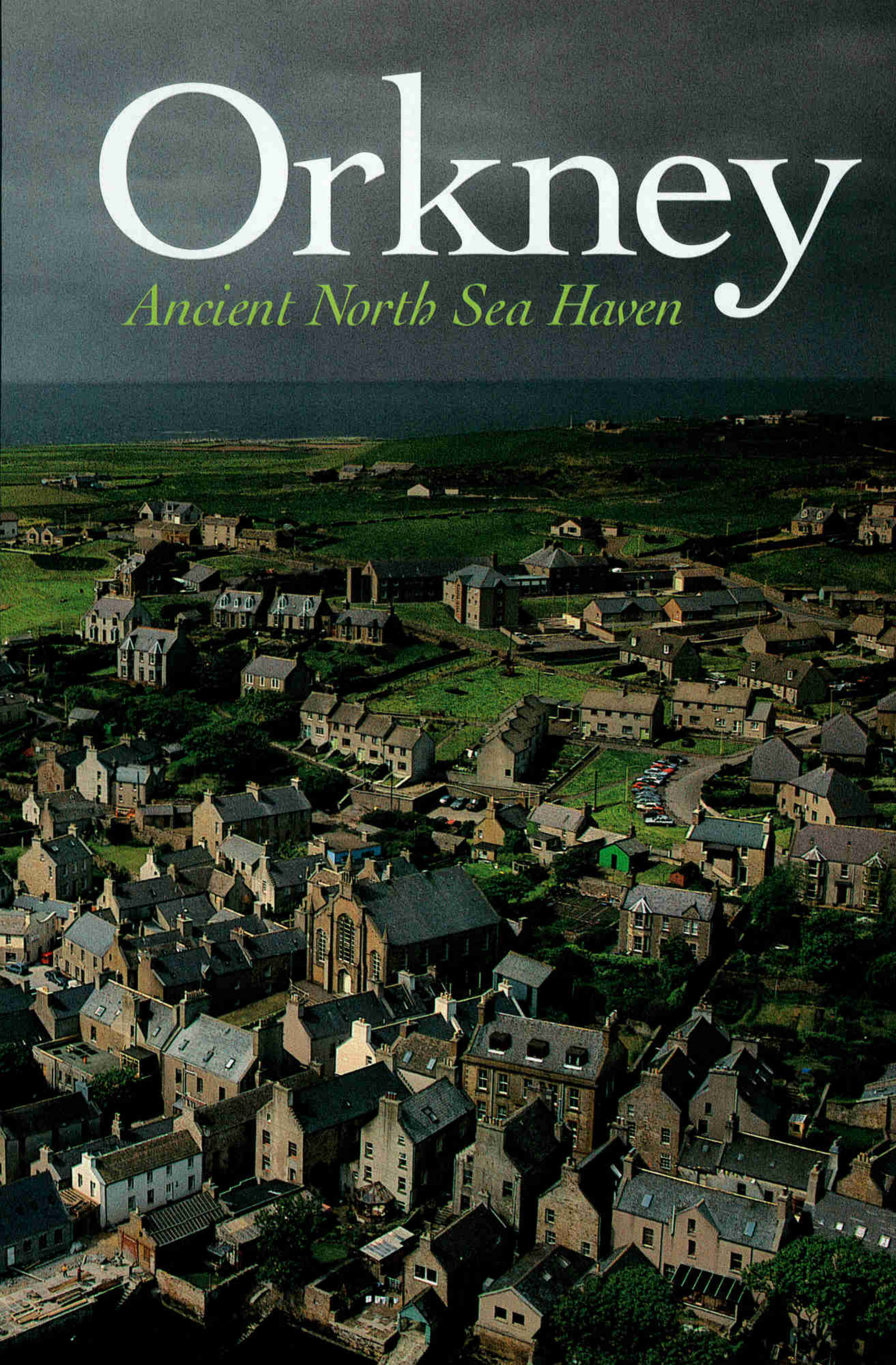
A PERILOUS FUTURE *awaits a chick on the threshold of fledging. The first challenge is to survive infancy; 80 percent die before fledging, killed by predators or exposure to cold rainwater that seeps into the nest. Among those that leave the nest, fewer than 20 percent*

reach adulthood. Lore says the quetzal must live free—that it cannot survive in captivity. Though not strictly true, the bird is rarely found in zoos. Conservationists aim to work with local landowners to save this bird, whose feathers their ancestors valued more highly than gold. □

Draped like gray lace on an emerald shore, the Orkney town of Stromness recalls a past of whaling, war, and trade. History suffuses these Scottish islands, where modern minds and Viking souls entwine.

Orkney

Ancient North Sea Haven





By BILL BRYSON
Photographs by JIM RICHARDSON

FROM THE SCATTERED HAMLET of Lyness on the island of Hoy it is a 13-mile drive through a landscape of empty hills to the forgotten Rackwick valley, then a further five miles on a narrow road over blustery moor to the house of Jack and Dorothy Rendall.

When you get there, you feel, as you often do in this remote corner of Scotland, as if you have found the first place past the back of beyond. The names en route sound like relics from an age of legend—Whaness Burn, Dwarfie Stane, Trowie Glen, Moss of the Whitestanes—and the view across the sheltered waters of Scapa Flow is of a string of bottle-green islands afloat on a vast emptiness of sea.

With its restless skies and ethereal silvery light, the setting has a haunting, elemental beauty that brings to mind a remark of the local poet George Mackay Brown: "In the course of a single day you can see, in that immensity of sky, the dance of sun, cloud, sea-mist, thunder, rain."

This is Orkney—70 or so low, treeless islands and countless skerries scattered over hundreds of square miles of cold water where the Atlantic Ocean meets the North Sea off the northern tip of Scotland (map, page 52). It is an ancient landscape, richly strewn with stone circles, burial chambers, prehistoric village sites, and other links to the past—a total of, almost unbelievably, eight per square mile.

The Rendalls' croft, or small farm, commands a view over open fields to foaming seas and a dramatic cliff called Sneuk Head. For all his 69 years Jack Rendall has been looking at this view. When he was growing up, Rackwick had 13 active crofts and a population of about 35. But one by one the neighboring farms fell silent as people moved out or died off. Modern comforts were a long time coming to much of Orkney, and that was more than many islanders could bear.

"By the early 1970s," Rendall recalls, "I was the last person left in Rackwick."

Six miles from his nearest neighbor, Rendall faced a life of solitude—a common fate for many in Orkney's more outlying parts. Then one summer he befriended a young Welshwoman who had come to Hoy on vacation. They were married the next year.

"We courted by post," says Dorothy with a smile.

When their daughter Lucy was born in 1980, it was the first birth in Rackwick since the 1940s. "At about the same time," recalls Dorothy, "we got electricity, and they built a new school and improved the ferry service. With all that, people



Pulling together to master the sea, students of Stromness Academy learn the art of rowing. "Waters around the islands can be quite dangerous," says instructor Sean Milligan. Reminders of mortality are as plentiful as Orkney's centuries-old tombstones, which bear emblems of life and death (above).

BILL BRYSON is a frequent contributor to NATIONAL GEOGRAPHIC. He is the author of several books, including *Notes from a Small Island* (Morrow, 1996), a look at Britain and its people. JIM RICHARDSON has photographed Scotland (September 1996) and nine other articles for the magazine.

were more inclined to move back to Hoy. Now we have a population of 11 in Rackwick. The future hasn't looked so bright for a long time."

I asked her if it had been hard to adjust to life on a remote Scottish island. "Well," she laughed, "you learn not to forget anything when you only get to the shops twice a month. But you soon adjust."

Or possibly one is just born to it. As Jack walked me out to my car later, we paused to take in the arresting but essentially empty view—a grassy sweep of land running down to a level plane of sea—and I asked him if it hadn't been lonely living there alone.

"Oh no," he said earnestly. "The postman came every day, you see."

Orkney people, you quickly realize, are like that. They measure the world in a different way. Without a thought of irony, they call their principal island Mainland, though it extends barely 25 miles at its widest stretch. The lands beyond—Scotland, England, whatever else there may be—are often referred to by the generic, all-embracing term "doon sooth." Even in Kirkwall, the islands' trim and busy capital and largest town, with a population of nearly 6,000, the world beyond the water soon begins to feel like a vaguely doubtful rumor.

It is possible to reach adulthood in Orkney without ever having crossed a busy street, ridden an elevator, or waited at a traffic light. Features of life that are elsewhere routine can here take on an exotic air. Alastair Cormack, who with his wife, Anne, taught for many years at the little school on the northeastern island of Sanday, recalls how their teenage son, on a school trip to Kirkwall after the family moved to the islands from Glasgow, went into a restaurant with two of his classmates and was astonished when they asked him, after some sheepish hesitation, to order for them. "They didn't know how to do it," he says with a tone that is, 20 years later, still full of wonder.



Alive with the joy of melodies played since she was a girl, Margaret Leask joins friends for a regular round of folk reels and waltzes at a hotel in Stromness. "I don't want to see the day I can't have a tune," says Leask. Kirkwall—the larger of Orkney's two sizable towns—hosts loftier music at its annual arts festival, where classical chords suit the 12th-century splendor of St. Magnus Cathedral (opposite).

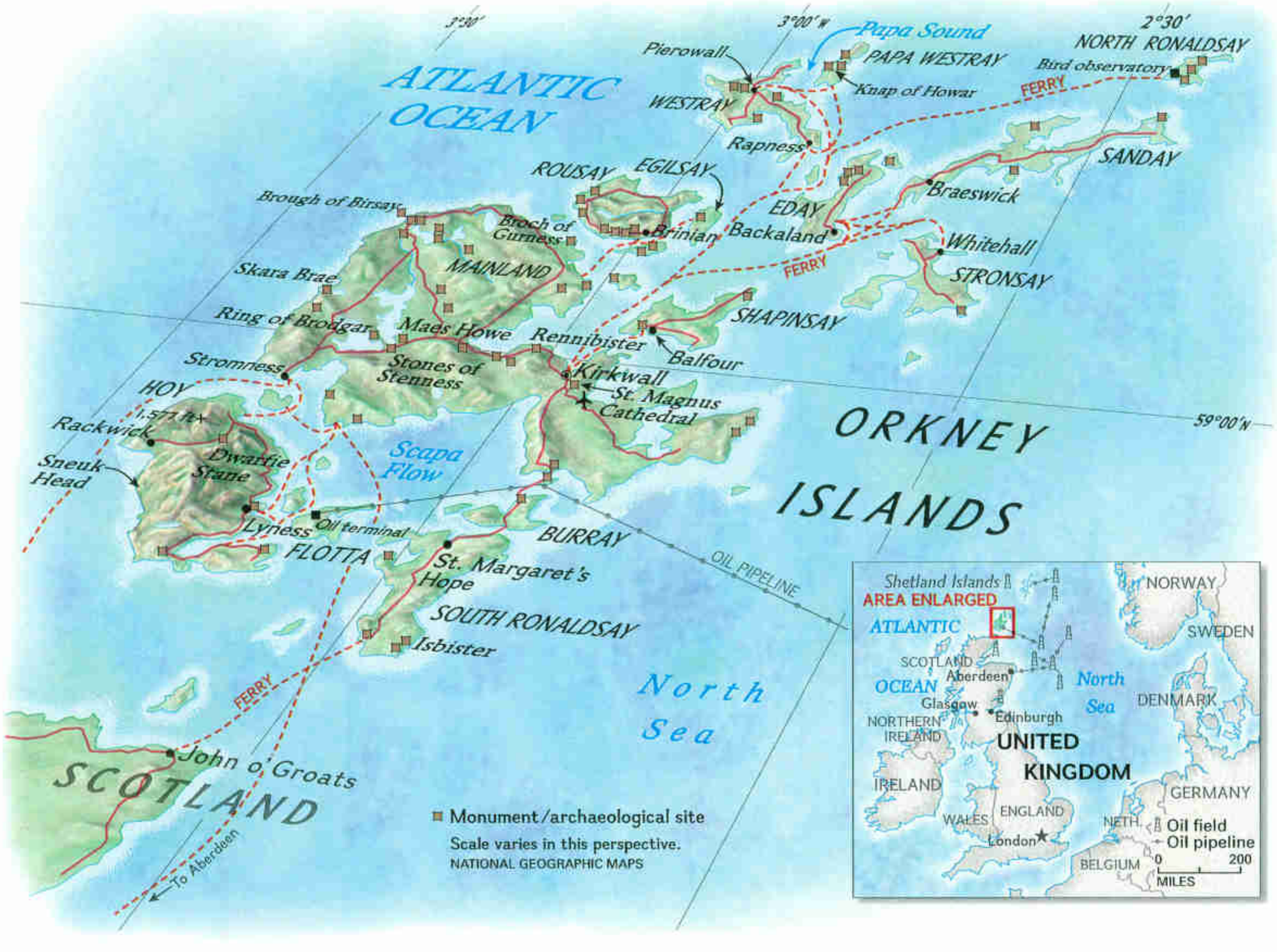
THERE IS an old joke on Orkney that one day the wind stopped and everyone fell over. To walk Kirkwall's main street on a gusty day—which is to say, on any day—is to take part in a mass pantomime that recalls the movements of deep-sea divers in weighted boots and serves as a vivid reminder that this is a place apart.

It is a point I put to the Reverend Ronald Ferguson when I waded through an autumn bluster to his house on a small hill above Kirkwall, a gray but friendly town built around a quiet harbor and curving seafront. A cheerful figure, Ferguson is the minister of St. Magnus Cathedral, the northernmost cathedral in Britain.

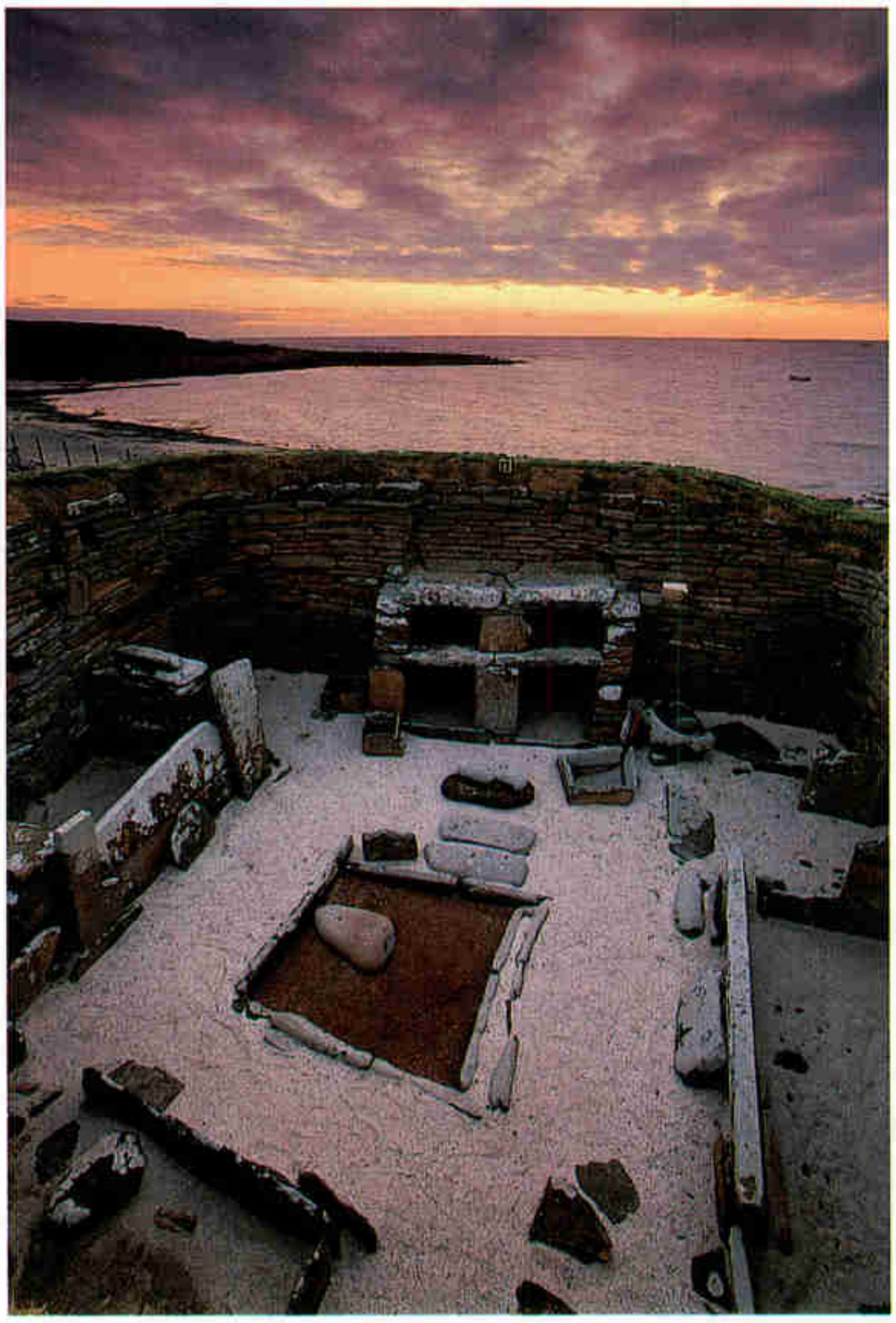
"Oh, yes, it's a different world here," he agreed without hesitation. "And mostly in good ways. I came here from a district in Glasgow so rough that when people went to bed at night they locked their inside doors as well as the outside ones. Here when they talk about crime prevention, they mean not leaving your car keys in the ignition overnight. We are also a long way from the seat of power here—closer to Norway than to London—which contributes to a sense of separateness."

Like the Shetlands 50 miles to the north, Orkney has historical as well as geographic links to Scandinavia. For





Ceaseless winds scour the Orkney archipelago, some 70 treeless isles starting six miles north of the Scottish mainland. A gale in 1850 uncovered the Neolithic village of Skara Brae (right), dating from 3100 B.C. Stone cupboards recall herders who lived here for 600 years. Norsemen conquered the islands in the ninth century A.D. and reigned until transferring them to Scotland in 1468. Many folk here still feel more Nordic than Scot. Some feel deeper roots. In 1958 farmer Ronald Simison (far right) discovered the prehistoric tomb of 340 people. "I work the same ground they worked," he says. "I feel like part of these people."



almost 500 years, until the 15th century, it was a Norse colony. The Vikings were lured from the sea by the islands' gentle terrain, stable climate, and rich soil, which provided ideal—and in this part of the world almost unique—conditions for pastoral farming. To this day Orcadians overwhelmingly draw their livelihood from the land rather than the sea.

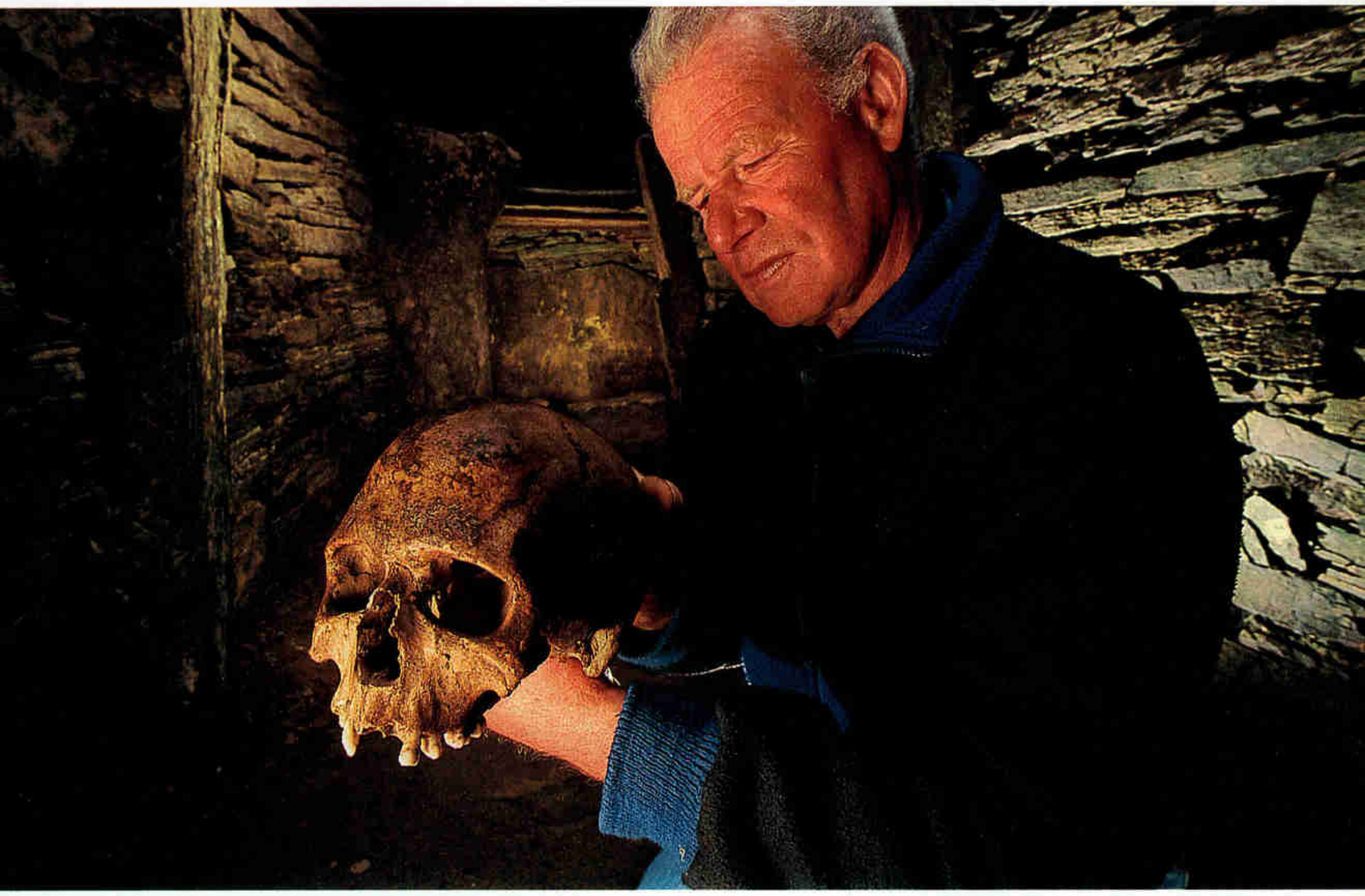
St. Magnus Cathedral, begun by a Viking earl in 1137, is a striking reminder of the Norse heritage. It is a magnificent structure—but also magnificently expensive to maintain. Fortunately for Ferguson and his parishioners, the local government provides £140,000 ($230,000 U.S.) a year for its upkeep. While the cathedral is supported entirely by local tax revenues, other parts of island life benefit from offshore wealth: North Sea oil.

A special levy on the oil industry underwrites a fund, now worth a hundred million dollars, for projects that support economic development, from subsidized transportation to new farm start-ups.

Even so, the future of many of Orkney's 18 inhabited islands is far from assured. A century ago Orkney's population was comfortably above 30,000. Today it is a little over 20,000. On the outer islands the fall has been even steeper, from 13,800 in 1891 to just 4,400. Nowhere has the decline been felt more acutely than on Papa Westray on Orkney's northern fringe.

Four square miles of grass and wind, Papa Westray—Papay to the locals—feels like a long way from anywhere. It has a small shop and school, two roads, some seductively empty beaches, and not much else. Only a few silhouetted farmhouses and huddled cottages, many of them roofless and abandoned, cautiously intrude on the skyline.

Jim Hewitson and his wife, Morag, are delightful people, but you have to want to see them. To reach them by boat, I had to rise before dawn to catch a ferry from Kirkwall to the island of Westray. Then it was a seven-mile ride by bus across Westray to the little port of Pierowall and finally another ferry across Papa Sound. Altogether it took three hours to cover the 32 miles.



Legend has it that the 5,000-year-old Stones of Stenness are the petrified bodies of drunken giants. Only four of twelve stones remain in what had been a circle likely used for astronomy, prayer, or revelry. Sheep still graze on this land, and some area fences were probably built from fragments of the toppled stones.



"Used to be much worse," Jim said when he greeted me at the dock. "There are more ferries now, and we have two daily flights to Kirkwall in a light aircraft."

He led me to a Volvo that could charitably be called past its prime, and we labored up a small hill to his house in the center of the island.

Before he came to Papa Westray in 1987, Hewitson was a journalist in Edinburgh. I asked if he didn't miss that. "Oh, occasionally it would be nice to poke around a bookshop or pop down to the pub for a wee drink, but there are compensations." He indicated the tranquil scene before us—fields of cows and sheep grazing in mild autumn sunshine and an infinity of calm sea all around. "You give up some convenience but also a lot of stress. I reckon that's a fair swap."

Hewitson makes a living writing books on Scottish history and a weekly column on island life for a Glasgow newspaper. "There's more to write about than you might think," he said as we pulled up to his house. Just then a postal van pulled up, and Jim Rendall rolled down his window to say hello and pass Hewitson his mail.

"Jim is the island postman—actually the island everything," Hewitson said. "How many positions do you have, Jim?"

"Oh, just five now," Rendall replied with the bashful smile and melodic, rising intonation common to nearly all native Orcadians. "I have had as many as 15 official positions at once, but now I'm just postman, shipping agent, telephone repairman, registrar, and justice of the peace."

I asked him what his responsibilities entailed.

"Well, among other things, I can marry you, issue you a gun license, pay out your pension, repair your phone, or sign a warrant for your arrest." He scratched his throat thoughtfully. "Mind you, I've never actually signed an arrest warrant. No crime here, you see." This was said almost with a hint of wistfulness.

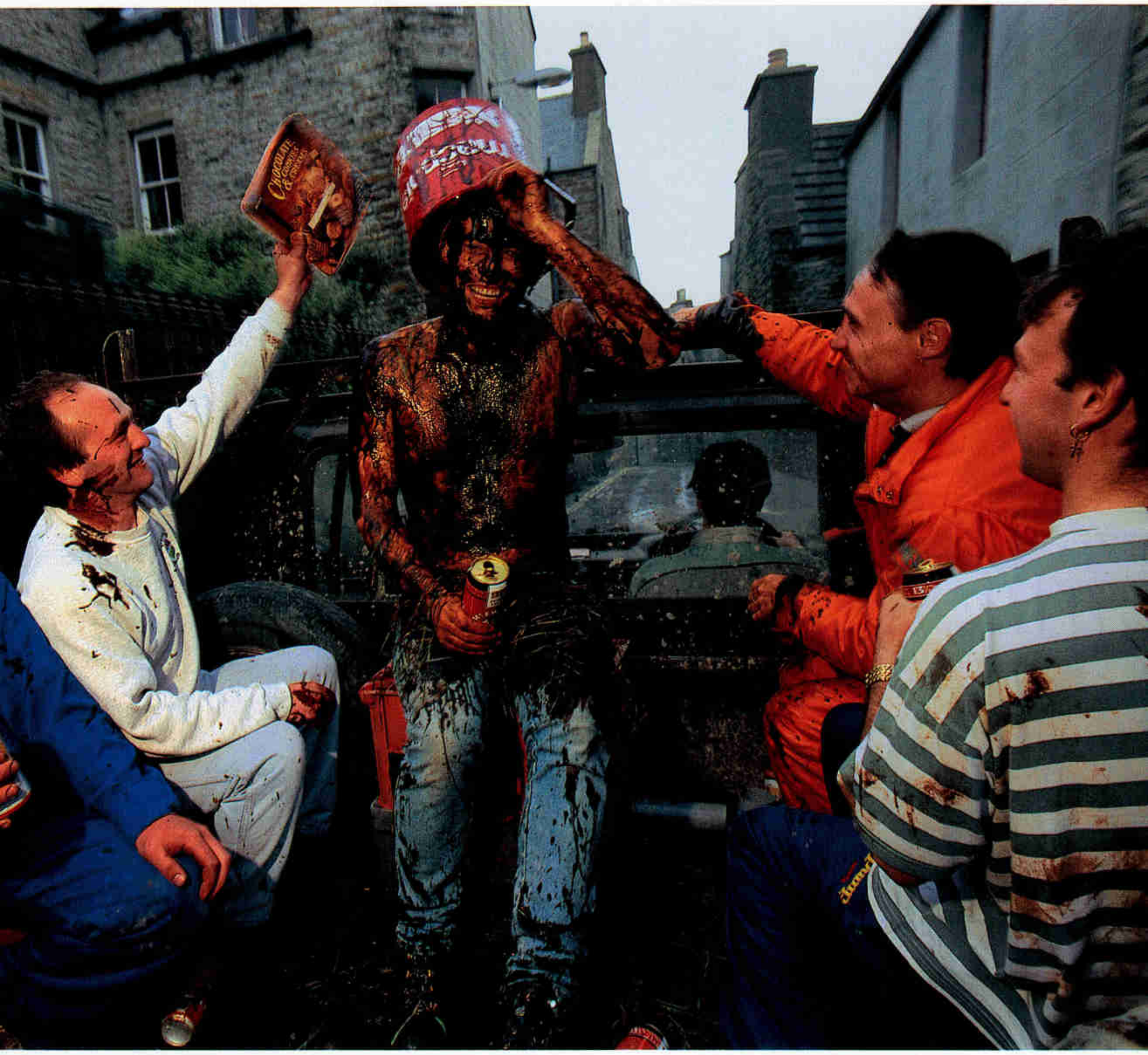
I mentioned that I had just met another man named Rendall, on Hoy.

"Ah, that will be my cousin





Fueled by a pint and a raucous ride through Stromness, Allan Stanger bears a traditional "blackening" days before his wedding. "Took three days to get it out of me hair," says Stanger of the syrupy bath of molasses, cocoa, eggs, and sand. Casks of a finer mix—whisky—age at the Highland Park Distillery (left), where kilns fired with local peat yield malt with hints of heather.



Jack," Jim said. "Give him my regards if you see him again. Well, I must fly. Cheerio."

Hewitson beamed. "See what I mean?"

Jim and Morag live in the island's old schoolhouse. The "new" schoolhouse—which hasn't actually been new since the 1870s—is next door and has eight pupils. The great fear, as on all Orkney islands, is that one day the numbers will fall so low that it will be closed. "That's always a death blow to an island," Morag said. "Families won't move to an island without a school."

The school takes children through age 11. Then they commute for two years to a school at Pierowall, and from 14 onward most board at a secondary school in Kirkwall. The Hewitsons' youngest child, Katy, had just started her second year away from home. "It's hard to let them go at that age," Morag said. "We don't see her much during the school year." Their two older children are at college in Aberdeen and Glasgow. Like most outer island parents, they don't expect their children to move back.

A century and a half ago Papa Westray had a population of 337. Today it hovers around 65. The obvious solution is to bring in outsiders—"ferryloupers," as they are known in the local parlance. "But there is little work here," Hewitson said. "And, anyway,



it's not a life that suits everyone." Abruptly, he added: "There is something I want to show you."

We strolled half a mile down a farmyard track past the island's 12th-century church to a neatly walled enclosure above a stony beach. There, bunkered into a grassy slope, stood the remains of a small stone cottage. With its built-in alcoves and carefully fashioned work surfaces, it had an air of cozy domesticity. You could imagine an occupant humming contentedly as she fixed dinner or tidied up—which is a little remarkable because the dwelling, known as the Knap of Howar, was last occupied more than 5,000 years ago in the late Stone Age. It is the oldest surviving house in northern Europe.

"And do you know," Hewitson told me, "the building techniques you see here are still used on this island. There is, you see, a certain continuity here. When you realize that, it makes you feel it's worth saving."

Orkney's archaeological wealth ranges from a lonely Iron Age stone tower on North Ronaldsay to the best preserved Neolithic village in Europe at Skara Brae on Mainland. In all there are 2,993 known archaeological sites.

How many more might lie undiscovered is a question I put to Raymond Lamb when I caught up with him at his office in Stromness, Orkney's second largest town. A bluff, busy Englishman who has been the islands' official archaeologist for 17 years, Lamb smiled tolerantly and took me to his office window. He pointed to a tiny uninhabited island called Outer Holm just offshore. "See that slight hillock on it? Well, that's almost certainly a prehistoric structure. So probably is that ribbed line to the right of it. And possibly that mound. That's the sort of density we are dealing with here."

Unfortunately, there aren't enough resources to mount many excavations. "All over there are at least a hundred sites just falling into the sea—we get some ferocious winter storms—and we can't afford to record what we are losing, much less preserve them."

HERITAGE IN ORKNEY extends beyond archaeology. There is also the islands' arresting dialect, which combines old Norse words with many unique or archaic English expressions in a way that leaves outsiders—known as *eens fae aff*, literally "ones from off"—hopelessly befuddled.

One person who knows this better than most is Kevin Woodbridge of North Ronaldsay, the remotest of Orkney's inhabited islands. "When someone says to you, 'We hid a quey caff yistreen' ('We had a female calf last night'), you know you are on the fringes of the English-speaking world," he says.

Twenty years ago Woodbridge was a physician at a hospital in Manchester, England. One day he heard that North Ronaldsay was looking for a GP. That North Ronaldsay is an important stopover for migrating birds, and Woodbridge a keen birder, played a big part in his decision to take the job. Today Woodbridge runs what is thought to be the smallest medical practice in Great



A tender touch works wonders when Dr. Kevin Woodbridge visits patients on North Ronaldsay. "The formalities of professional and personal life get blurred," says Woodbridge, who in 20 years has seen the aging population dwindle to fewer than 90 on Orkney's most remote inhabited isle. Children keep tradition alive on South Ronaldsay, where Christopher Burton dresses for a gala.

Britain and helps run the North Ronaldsay Bird Observatory. More than a million birds—including razorbills, puffins, kittiwakes, guillemots, skuas, curlews, and fulmars—spend all or part of the year on the islands, and the observatory does important work tracking their movements.

North Ronaldsay's population has slipped from 126 when Woodbridge first came to just under 90 now. Many more would like to live in Orkney but don't because there is no work to match their skills. One who has managed is Alan Craigie, who grew up in Kirkwall but went to Edinburgh to learn catering and became head chef at the British consulate in Los Angeles. In 1985 he and his wife, Joyce, who is also an Orcadian, returned to the islands and happened upon a failed restaurant, the Creel Inn, in the hamlet of St. Margaret's Hope on South Ronaldsay.

On an impulse, the Craigies bought it. To stroll along the village's tranquil quayside in golden sunshine, as I did one afternoon, is to understand at once the appeal. With its snug stone houses and old church, St. Margaret's Hope is an exquisitely pretty place, and it feels a long way—no doubt because it is a long way—from the tumult of modern life. Before me gulls wheeled across the sparkling water. Behind, from a handsome whitewashed Georgian house, wafted the promising aromas of the Creel Inn's celebrated kitchen.

To any dispassionate observer, the Craigies' decision to open an upscale restaurant in a remote village must have seemed a kind of touching madness. Yet they have prospered, largely by focusing on locally produced food.

"Orkney produce is famous all over Europe," Alan said, "yet when we came, it was almost totally neglected locally. Sanday produces the most delicious sweet cockles you have ever tasted, but they all went for export. The same was true of crab, lobster, even a lot of the best lamb and beef. It all went to places like Germany and Scandinavia. People here were eating processed fish cakes and frozen beefburgers made in Glasgow. It was crazy really."

Today the Creel is nearly always busy with both locals and people who have come from all over—but it wasn't always easy.

"We struggled for the first five years," Alan said. Now the problem is one of success. When I met him, Craigie had worked 117 days in a row.

Since 1985, he told me proudly, he had cooked every meal in the Creel kitchen.

"But it's worth it," he added almost instantly. "We have two small children, and there is no better place in the world for them to grow up. I don't know a single person who wouldn't live here if they could."

Two days later, I had to return my rental car before flying out, and I called the office in Kirkwall to find out where I should drop it since the firm didn't seem to have a desk at the airport.

"Oh, just leave it in the airport car park," the woman told me. "Somebody'll come for it next week."

"But what about the keys?"

"Bung 'em in the glovebox."

I hesitated a moment. "Are you sure?"

I could sense her smiling. "This is Orkney, love," she said gently.

Of course it is, I thought. □



Relics of a vanished life, a Bible and crockery remain in an abandoned croft house. Small tenant farms have given way to larger private holdings where cattle graze on fertile Orkney pastures. Myriad bird species also thrive on sea cliffs and moors—places dear to the people who claim this island home.

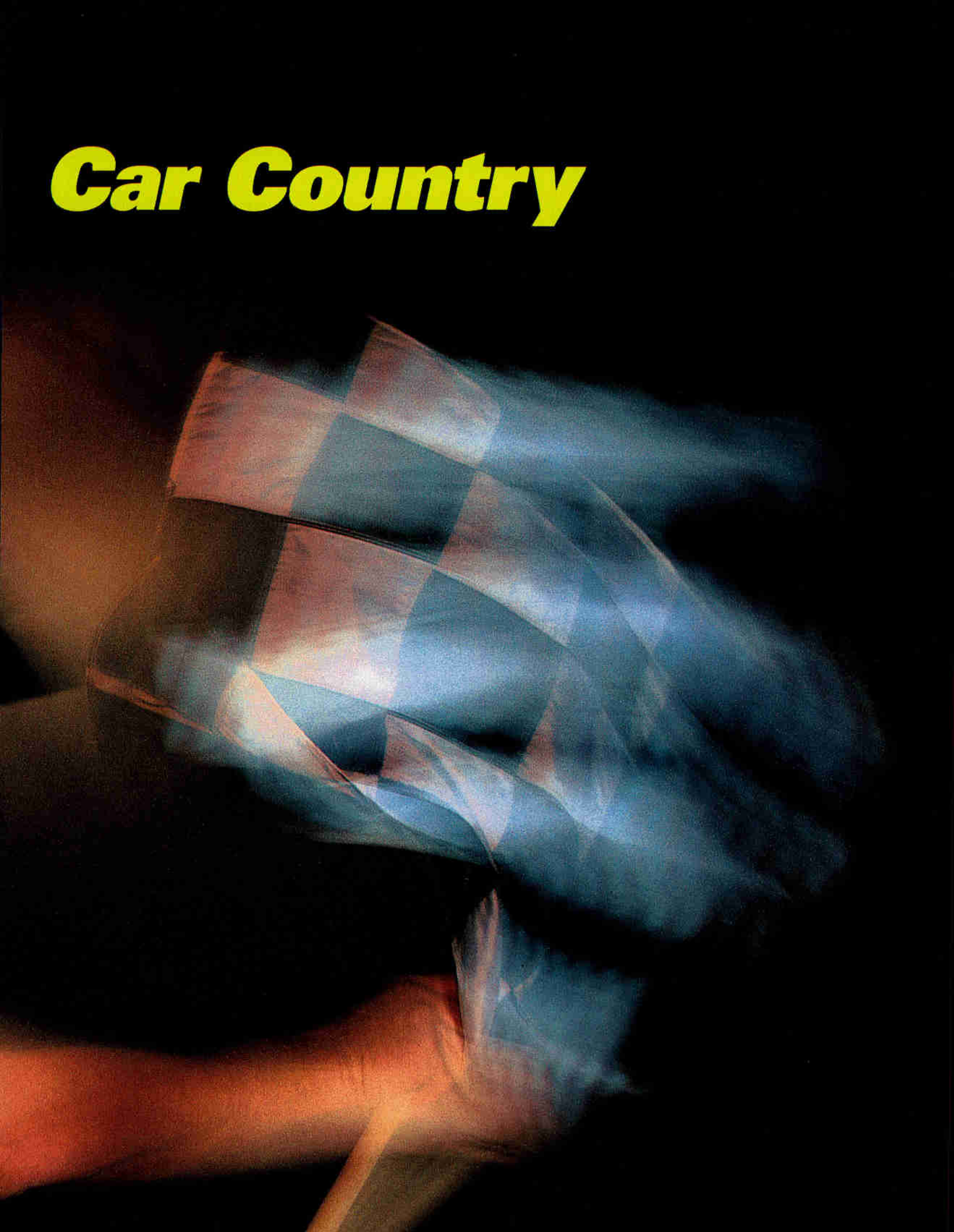


Americana

Fast Times in Stock

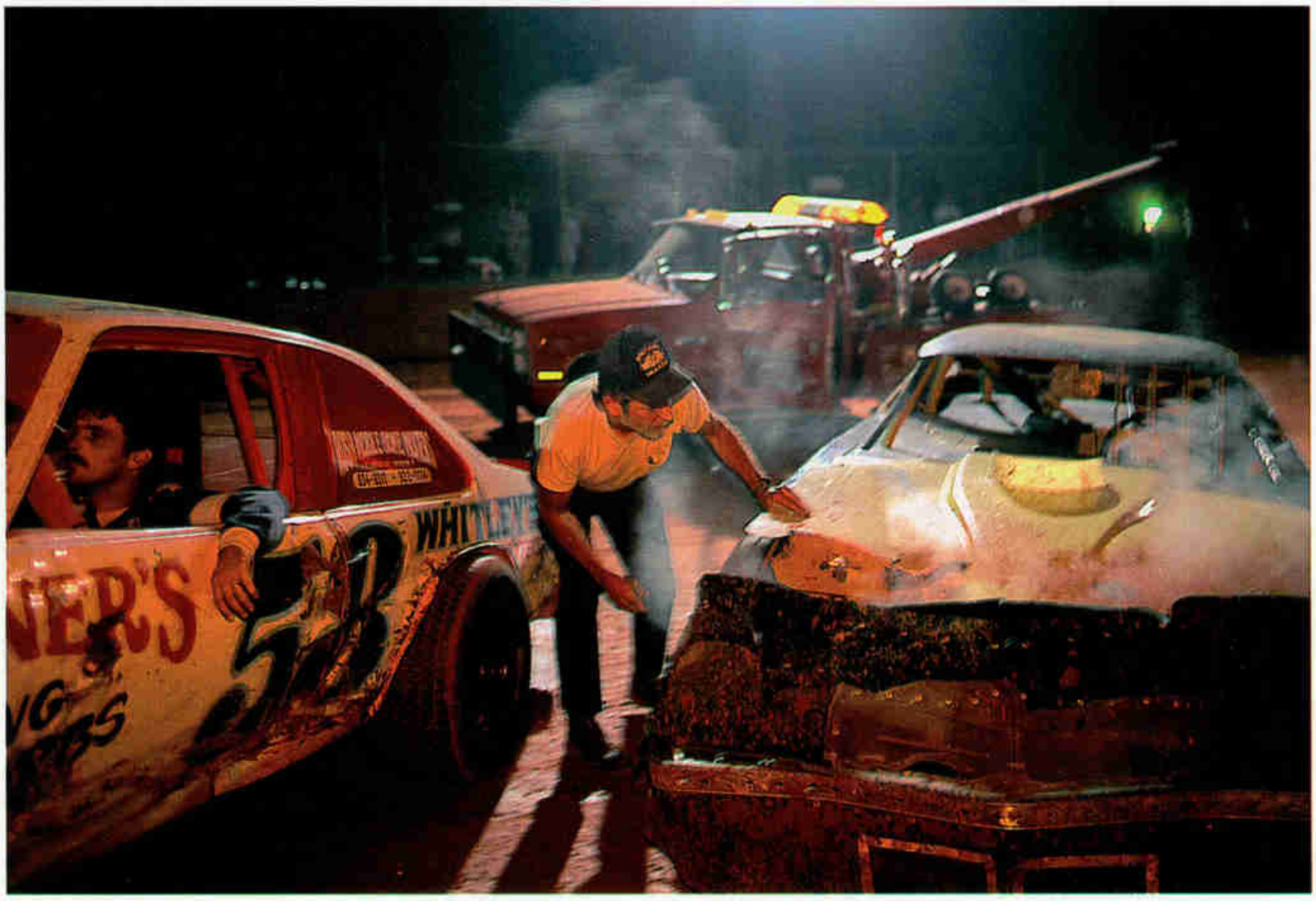
The thunder of unmuffled engines, a streak of metal at the finish line, nights hot and southern: It's stock car heaven at East Lincoln Motor Speedway in North Carolina, a shrine to down-home racing.

Car Country





Getting hoarse about horsepower, fans stay on their feet at Cherokee Speedway in Gaffney, South Carolina, one of the country's hundreds of dirt tracks.



Steam from a busted radiator sends a signal for help after a two-car "bend up" at the East Lincoln track in Stanley, North Carolina. Heated rivalries and slippery red clay guarantee crashes. That's just fine, says a regular: "A lot of us come for the beating and the banging."

Cooling off in her street car, Dana Cook, 23, can dream of when she raced here at Cherokee, winning twice in a modified Mustang. "I guess I got mature and found a real job," she says, though with a brother and boyfriend in racing she rarely misses a Saturday night.

SPECIAL THANKS
TO: Mom & Dad

Sponsorship begins at home for a Cherokee driver with a do-it-yourself race car. You can bet it's not a foreign engine. Made-in-America is the stock car code.

BY PETER DE JONGE

PHOTOGRAPHS BY DAVID ALAN HARVEY



■ Prime-time speedsters blaze around the track at Martinsville, Virginia, for a Winston Cup event, top rung of the stock car racing world. Nationally televised and backed by name-brand corporations, Winston Cup competitions have transformed the pastime and its moonshiner's roots into one of the richest, fastest growing sports. Explains champion driver Darrell Waltrip, "It's this tremendous love affair we have with the automobile."

AFTER CLINT ELKINS, 21, won the first race of his stock car racing life at Cherokee Speedway ("The Place Your Mama Warned You About") in Gaffney, South Carolina, he parked his car, number C1, at the end of the straightaway and posed for the requisite photo holding the big plastic trophy and the frayed checkered flag. And he did the run along the fence grazing the outstretched fingertips of the kids who sprint down from the bleachers at the end of every feature. Then, in a traditional but sudden ceremony ministered by his crew, he was knocked down and rolled and dragged and rubbed into the red Carolina mud that has yielded the sport's most legendary drivers, from Herb Thomas and Buck Baker to Richard Petty and Dale Earnhardt. His baptism was so complete that it took a week to get the grit out of his black racing suit.

"I soaked it in a bucket," says Elkins, "then I put it up against a wall and blasted it with a high-pressure hose."

According to the historians, there are several reasons why stock car racing started in the Southeast. There was the inspiring example of teenage bootleggers like North Carolina's Junior Johnson, who loaded up their '39 Fords with backwoods tax-free moonshine and outran the revenuers all night long from Wilkesboro to High Point to Greensboro to Charlotte. Their jug carriers, unremarkable on the outside so as not to attract attention but with enough motor to do a hundred in second gear, were essentially the first racing stock cars. There was also the crying need for entertainment violent and stimulating enough to get a rise out of the veterans returning to quiet towns after the four years of mayhem of World War II.

The most crucial link to this region, however, wasn't money or history but geology. It was the availability wherever the eye turned of the Earth's greatest natural racing surface, the red-clay soil of the Piedmont Plateau that swerves along the eastern flank of the Appalachians from Alabama to New York.

What began when a bunch of bootleggers got together in a dusty cow pasture for the novel pleasure of racing each other instead of the law is now America's fastest growing spectator sport. Since 1991, attendance at races sponsored by the National Association for Stock Car Auto Racing (NASCAR) has grown by 70 percent—almost four times faster than professional basketball. The Winston Cup, NASCAR's elite 33-race series, which includes the Daytona 500, the first and biggest event of the year, attracted six million fans last year, and many millions more watched on television. NASCAR has become a two-billion-dollar-a-year industry.

PETER DE JONGE, who lives in Manhattan with his two sons, is a frequent contributor to the *New York Times Magazine*. This is his first GEOGRAPHIC article. DAVID ALAN HARVEY, who grew up in Virginia, has photographed 30 articles for the magazine.



In recent years the Winston Cup circuit has added huge new speedways in Texas and California, but the sport is still at heart a small-town southern affair. NASCAR makes two stops each in Rockingham, North Carolina, and Darlington, South Carolina, and Martinsville, Virginia, and one of the most anticipated races of the year is the night race in late August on a concrete track in Bristol, Tennessee.

BRISTOL is one of the smallest Winston Cup tracks, but it touts itself as the fastest half mile in the world, with 36-degree banked turns that hold the cars in place like marbles spinning around the bottom of a bowl. So much speed in such a tight space promises disaster, which is why 130,000 seats a long way from even a midsize city sell out in two hours. "I'd go to this race even if I had to buy the ticket," says Phil Furr of the *Salisbury Post,* as he dips into a can of Copenhagen and looks down from the press box at the incandescent cars streaking through the lurid light.

There are a couple of minor mishaps early, resulting in yellow caution flags, but nothing very satisfying. When the race hits its stride, NASCAR's youthful king, Jeff Gordon, puts on a brilliant display, grabbing the lead and threading through the slower traffic like a suspect trying to lose the cops in a crowd. Suddenly he is struck from behind, then rammed again from the side and knocked into the inside wall. "There goes Jeff Gordon's Winston Cup lead," says Furr, pointing at a puff of black smoke exiting the stadium.

Just a few laps later David Green in the number 96 car gets pinched coming out of turn four, catches some air, and skids the length of the front straightaway on his roof, unwinding a brilliant trail of orange sparks. The red flag halts the cars, and for a couple of beats


Tide
AMERICA'S FAVORITE
Plus
STOP
MBNA
PONTIAC
Winston Cup Official
CIRCUIT CITY



JOSEPH S. STANCAMPIANO, NGS STAFF (OPPOSITE)

■ Flashy billboards for their sponsors, cars at the Hanes 500 race in Martinsville jam up in the pits for gas and new tires. Once limited to showroom models, Winston Cup cars have evolved into designer speed machines costing $250,000. A rain postponement (above) gives mechanics one more chance to tinker.

the stadium seems to share a long sweet sigh.

Then even before emergency workers move toward the car, a thousand tiny lights go off in circles all around the speedway. Seen from the height of the glassed-in press box, the silent twinkling suggests Earthlings extending themselves to extraterrestrials, until you realize it's just photographic rubbernecking. "Cautions are awesome," says Gary Bushell, who drives his motor home to several NASCAR races a year. "Anyone who says they don't like them is lying." And according to Kodak, Americans burn more film at stock car races than at any other picture-taking event.

It takes 20 minutes for Green, who suffers a broken shoulder blade, to be extracted from his car, loaded into a helicopter, and flown to the Bristol Regional Medical Center.

With about 50 laps left and Dale Jarrett and Mark Martin jostling at the front of the pack, I insert my Mack's Pillow Soft Earplugs and descend toward the bottom of the hippodrome, squeezing into a space about 30 rows from the track. While there is something primordial about witnessing a stock car race, like staring at a campfire, there is also something very sci-fi about it.

Wearing headphones that pipe in the call of the race from the Motor Racing Network, my neighbors sit transfixed. Utterly cut off from one another, each watches his own private race. Sometimes as the cars rush by, they jump up and shake a fist and scream in that discordant way of people who can't hear themselves.

Nostrils filled with the sweet burning char of rubber and gas and oil, and eyes tearing from the swirling smoky winds, I succumb to the hypnotic drone and blur. I feel as if I've stumbled into a post-apocalyptic coliseum.

To the uninitiated the devotion of stock car fans, nearly half of whom are women, is tough to fathom. Why would people willingly endure four hours of bumper-to-bumper traffic into and out of a speedway just to witness four



more hours of it inside? By way of explanation Humpy Wheeler, the maverick impresario of Charlotte Motor Speedway, speaks of a "mechalete," an athlete who uses a machine to compete. "This is something we're going to see a lot more of," he predicts, "because it gives fans two things to get excited about instead of just one." This is related to a second major attraction of the sport, which is the sheer volume of what Humpy calls "stuff." During the course of a season NASCAR fans spend more time gaping at race cars, the enormous rigs that tow them, and the custom buses that house the top drivers than they do watching the races themselves. It's like going to the mall.

But Humpy, who has been known to reenact a major American military victory complete with fighter jets on loan from the Pentagon and Hollywood-style special-effects bombs as a kind of pre-race warm-up, suspects a lot of the fervor is a reaction to the nation's clogged roadways. "We spend so much time stuck in traffic," he says, "that we just want to bury the accelerator and hold it there for a couple of hours, whatever the consequences."

Not that stock car racing is pure sensory overload. Occasionally the excess is offset by humbler themes. Go to Bristol, or any other track in the country, and a lot of time is spent simply watching men work on cars. It's



JOSEPH S. STANCAMPIANO

■ The hypnotic spectacle of cars racing bumper to bumper for 500 laps, at speeds up to 90 miles an hour, entertains a packed house at the half-mile Martinsville track. On faster tracks, like Daytona, speeds reach nearly 200 mph.

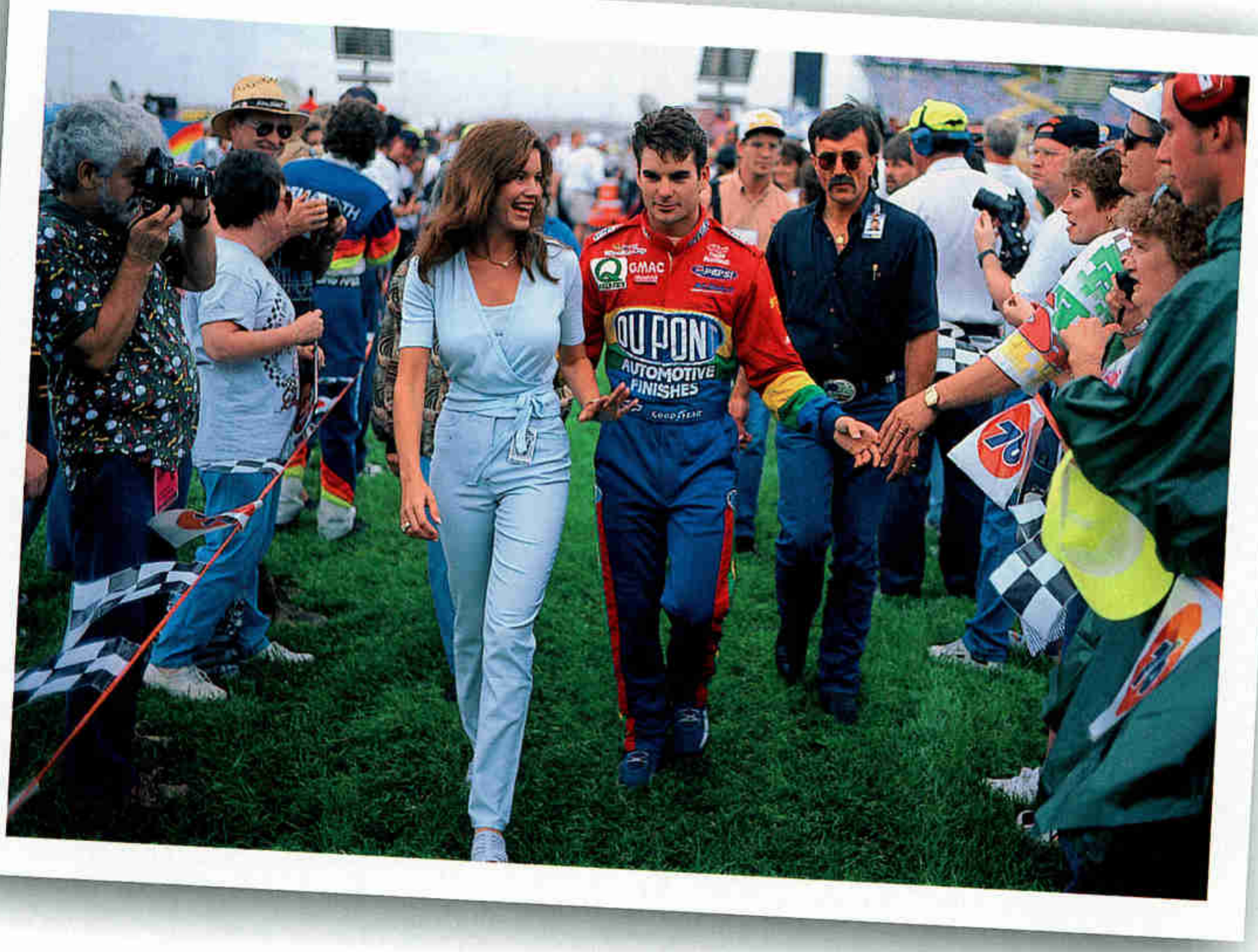
American mechanical competence as theater.

No sport is as labor-intensive. NASCAR crews work 12-hour days, six days a week, then race on Sunday. At small tracks, drivers work on their cars three or four nights a week after work. One NASCAR fan, who shows me a picture of the car he races in the Midwest, says, "I don't spend a lot of time drinking beer in the backyard or see a lot of movies."

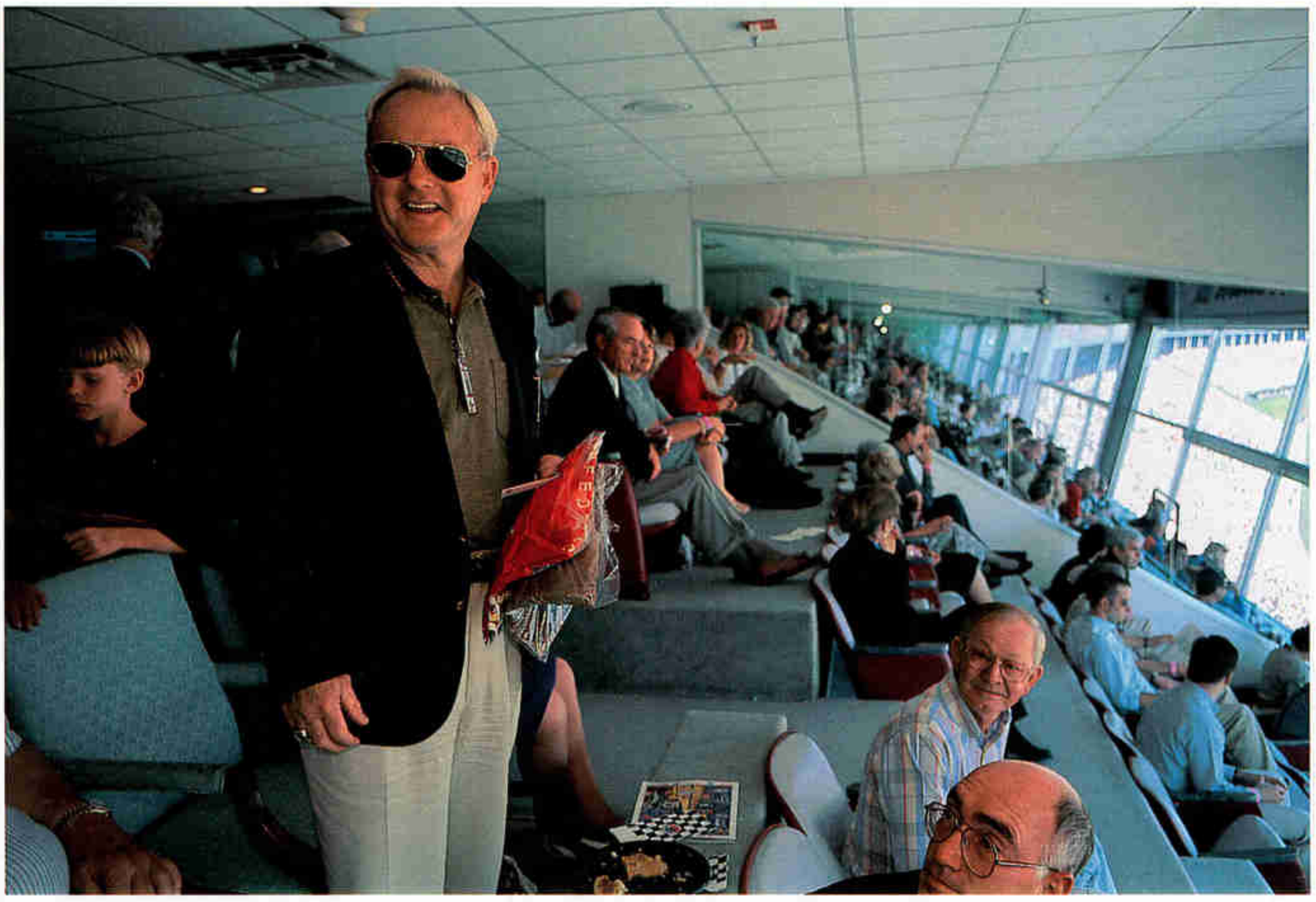
Talking with fans at the Daytona 500, I'm struck by how often pride in their work is part of what ties them to the sport. "I have a landscaping business in Orlando, and everything I own has a motor in it and wheels," says a man named Frank, who invites me to join him and his father, Ashley, in the converted touring bus in which they were spending the week.

Ashley, the son of a commercial fisherman who didn't want to follow his father to sea, is the retired owner of a small charter-bus company in Richmond. "I drove them, maintained them, and cleaned them. I never asked anyone to do anything I wouldn't do myself."

As Ashley, a cigarette dangling from one



Make way for the Kid: Jeff Gordon, the 1997 Winston Cup champ, makes a hero's entrance with his wife at Charlotte Motor Speedway. Last year he won a record six million dollars.



Lion of the luxury boxes, Humpy Wheeler loves a good show. The president of Charlotte Motor Speedway spices the Memorial Day Coca-Cola 600 with fireworks, mock battles, and even a salute from an astronaut passing overhead.

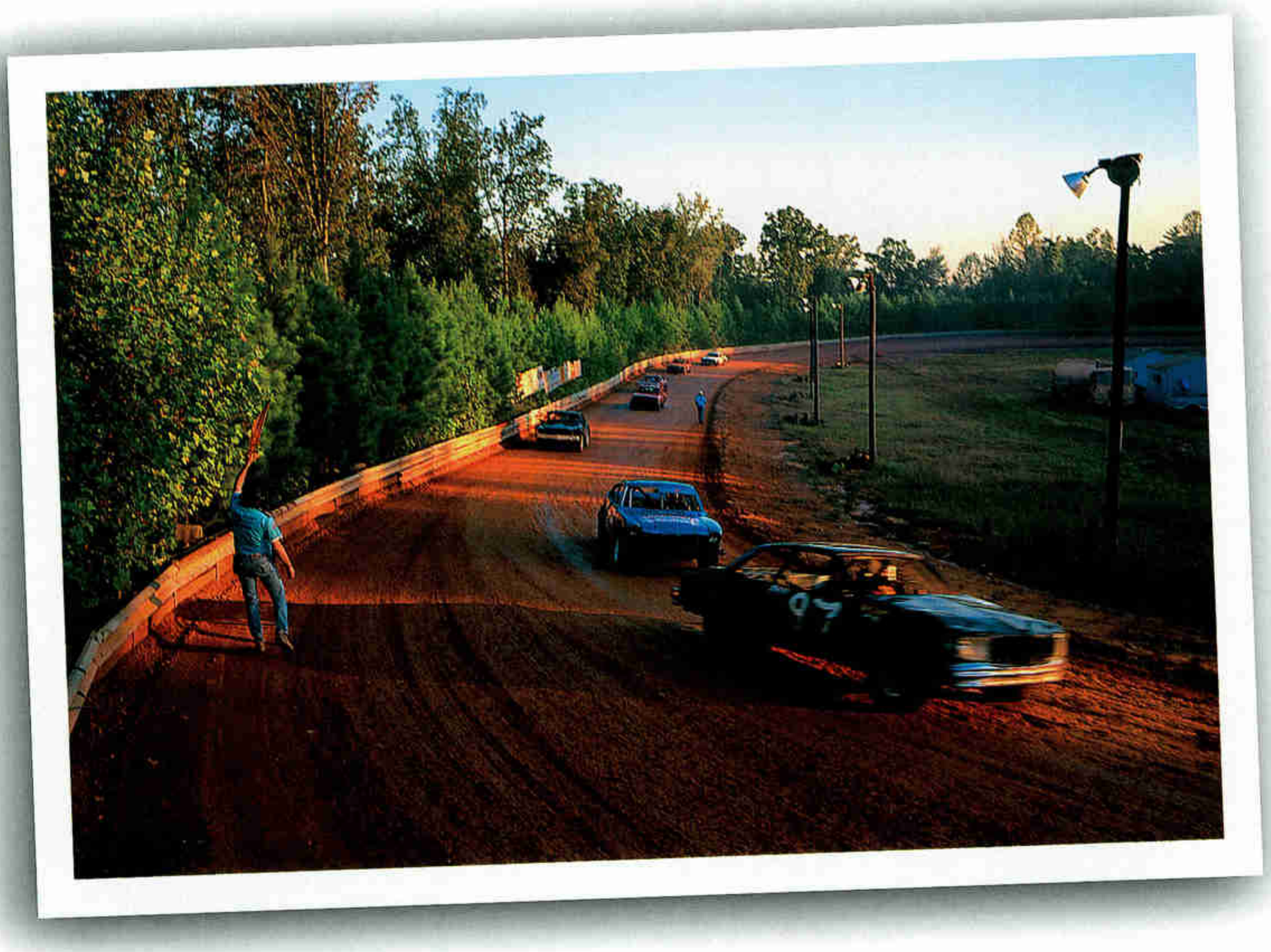


Hard act to follow, Richard Petty, dubbed the King for his 200 Winston Cup victories, exhibits the famous Petty look in front of his grandson, Adam. Retired, Petty will keep a sunglassed eye on Adam's budding racing career.



Nightstand? TV throne? A youngster will surely find a use for the spent racing tire he hauls from the Charlotte track. He is one of six million fans who saw Winston Cup races last year.

■ Weekend warriors at East Lincoln slow their cars to a growl as a caution flag warns of debris on the track. To win on dirt, says the track operator, "you have to be aggressive and know how to rub fenders and get physical."



corner of his huge smile, gives me a tour of the rig, pointing out the built-in wooden closets and VCR in the bedroom and the extra tank for shower water, it's obvious that for him half the pleasure of the whole enterprise is working on this behemoth in his yard. When we reach the tail end of the bus, he pulls the engine cover off the old diesel V-8 he rebuilt himself. "This is what pushes us," he says gratefully.

I can't tell you Frank and Ashley's last name, because it was drowned out on my tape recorder by 40 enraged, unmuffled, 550-horsepower engines ringing off the asphalt in turn four. Even thinking is difficult at Daytona, where everything the eye and ear takes in, from the vast sweep of the 2.5-mile track to the 175,000 fans to the ungodly noise, is Brobdingnagian.

THE GROWTH of stock car racing from regional phenomenon to mainstream entertainment—with the enthusiastic support of some of the planet's richest corporations—didn't require the sport to sell its soul so much as pave it over. When NASCAR held its first championship in 1949, only the old Daytona Beach track had some blacktop. Now every track on the circuit is concrete or asphalt. "As things got better," says Junior Johnson, "people weren't willing to get dirt all over their clothes and cars."

And so, as I traveled high and low trying to steep myself in the sport as completely as Clint Elkins was immersed in the red clay after his first win, I kept returning to small dirt tracks like Cherokee Speedway, because it's there that the soul of the sport still thrives, in all its dusty crepuscular glory.

"There's no finer place on God's green earth than Cherokee on a Saturday night," says Whitey Jones, 49, who's seen enough of the world to know, having done construction and factory work in New Jersey before returning home to Gaffney for good.

From where I'm sitting a few feet away on the concrete bleachers on a cloudless day in early June, looking through the wire fence at

mud-splattered signs for "Sunnydale Meats" and "Lucky's Game World Cafe," Whitey's pronouncement seems like a bit of a stretch. But to the man he's talking to, Danny Parker, who, like Whitey, has been coming to Cherokee Speedway for more than 30 years, the assessment is so incontrovertible it's not a piece of information but a greeting.

Below us in the steep late afternoon light a tanker truck is slowly circling the half-mile track releasing thousands of gallons of water onto the baked red clay until it glistens like a raw wet wound, and competitors are gingerly towing their cars across the deeply cragged infield. Behind us the early arriving fans are heading toward their seats. When I say "their" seats, I mean this literally, since the top row of the bleachers is filled with a motley collection of Naugahyde and plastic chairs, often secured to one another and the bleachers by two-by-fours. Fans install them at the track when it opens in February and drag what's left of them home when it closes in mid-November.

Whether, like Jones, you've passed the day in a small grocery store in Gaffney, or, like Parker, you've done your time in a textile mill just across the North Carolina border in Kings Mountain, or, like me, you've spent it in a midsize Toyota driving down from Charlotte, there's something unquestionably restorative about looking down at this wide-open scene with just enough of a focus at its core to draw your thoughts away from yourself and whatever miseries, fiscal or romantic, are dogging you. And it doesn't hurt if, at the same time, you're sipping a Coke and peeling the foil and waxed paper off a warm but not hot chili-flavored track burger. In fact, by the time the summer was over and I'd made several more trips to the track, which has no pay phone or running water in its bathrooms, and got acquainted with the prominent characters, Whitey's ranking of Cherokee among the world's great pleasure spots seemed almost reasonable.

In the infield a pair of stubborn old coots, 72-year-old Toy Bolton, who owns the "0 car" in the top late-model division, and Billy Scott, his 61-year-old driver, are sitting in the shade of their trailer. Both have defied the odds and their ages and their wives by refusing to quit.

"Just a challenge is all it is," says Bolton, when I visit him later at a defunct service station in Blacksburg where he spends three or four days a week preparing his cars. "You outsmart the other fella and you've done a good day's work."

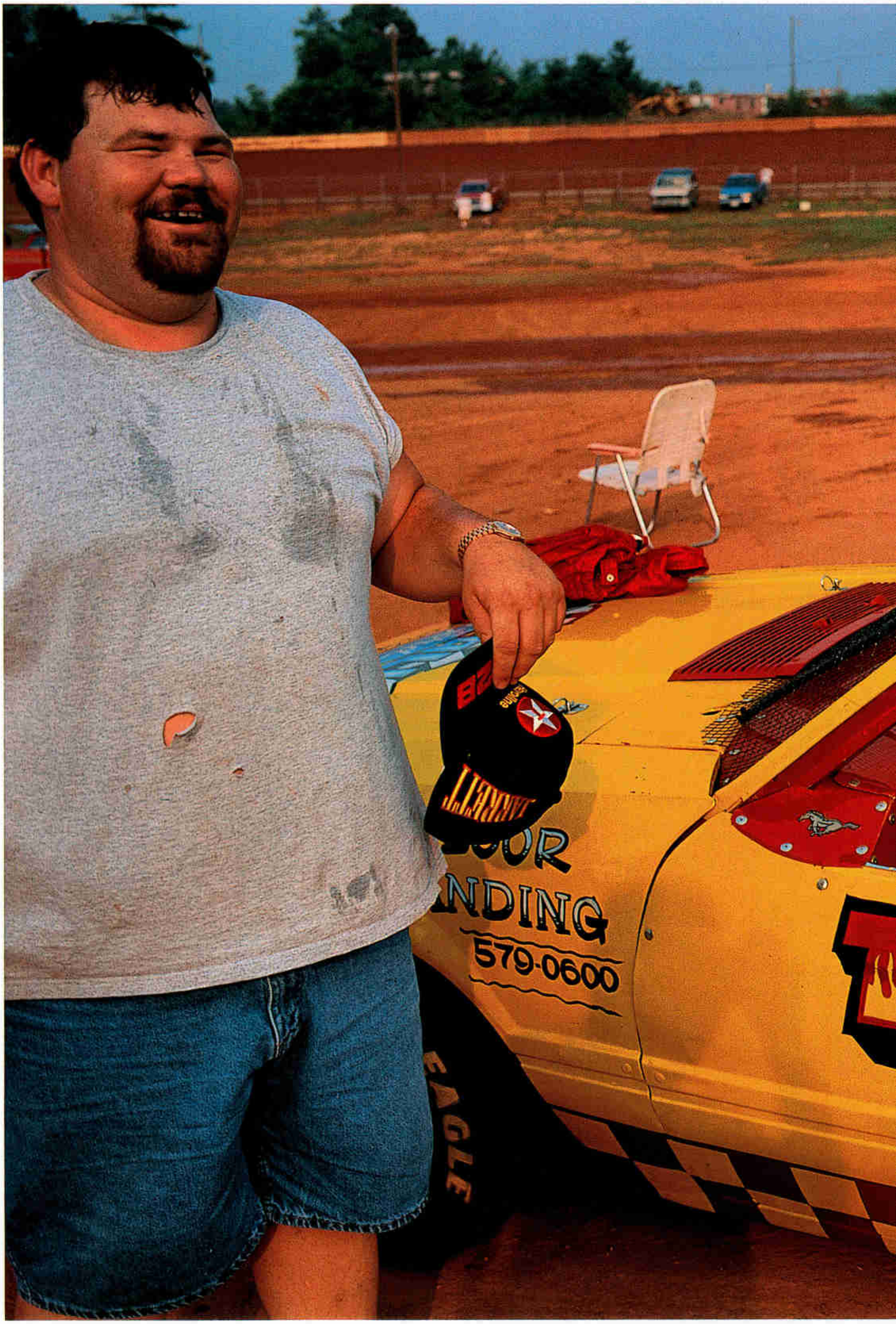
There isn't a single top driver at Gaffney who doesn't believe deep in his heart that he's good enough to drive NASCAR. At the same time, no one is holding his breath. "I still think I'm going to get that call to go racing," says 37-year-old Ricky Weeks, "but I wish it would hurry up and happen. The only thing holding me back is the almighty dollar."

Of all the regulars, Billy Scott, who estimates he's won more than 600 races in his career, has had the closest brush with the big time, having raced in the Charlotte World 600 in 1973 and then turned down a second NASCAR ride the next week. "When the circuit went on to Dover, I went back to work," he says. "I had a good job and a family, but I sort of regret it."

As Toy Bolton, who grew up in Gaffney and, like his father, spent time working in the mills, leans back against his trailer in the infield, he says, "To be a good driver, you need to have good reflex and just don't care. These young fellas come out of their cars dripping with sweat, but Billy doesn't have a drop on him. He just enjoys hisself."

Although they're racing for $10,000 tonight, Toy and Billy and all the others are really just racing for the right to keep on racing, with all their winnings going directly back into the car. No one races for long without a sponsor, and their "bossman" is Bill Corder, president of Lyf-Tym, a successful regional supplier of vinyl siding, gutters, and windows. Unlike NASCAR sponsors, however, Corder expects none of that money to come back in sales. "I call it pissing in the ocean," he says. "It's just something I do to stay normal."

That no one except Rock Gault, who owns the track, and Ernie and Paula Elkins, the track promoters, is making a cent tonight is a big part of the remarkable sense of community. From flagman Bruce Coyle, a forklift operator in a Nestlé warehouse, to ponytailed hillbilly track announcer Walter Faulkner, a welder, to star driver Ricky Weeks, a millwright in a lumber mill, everyone's got a day job and suffers from what Weeks, a five-time track champion, calls a "need for speed."



■ Boys will be boys around a fast car, joshing and fantasizing—the normal day-at-the-races stuff for Grady Fowler and his three-year-old nephew Tyler Reece at Cherokee. They are pals of car owner Terry McFalls, who himself started hanging around tracks as a boy "to see my daddy race. Once I drove one of those cars, I knew I had to have one."

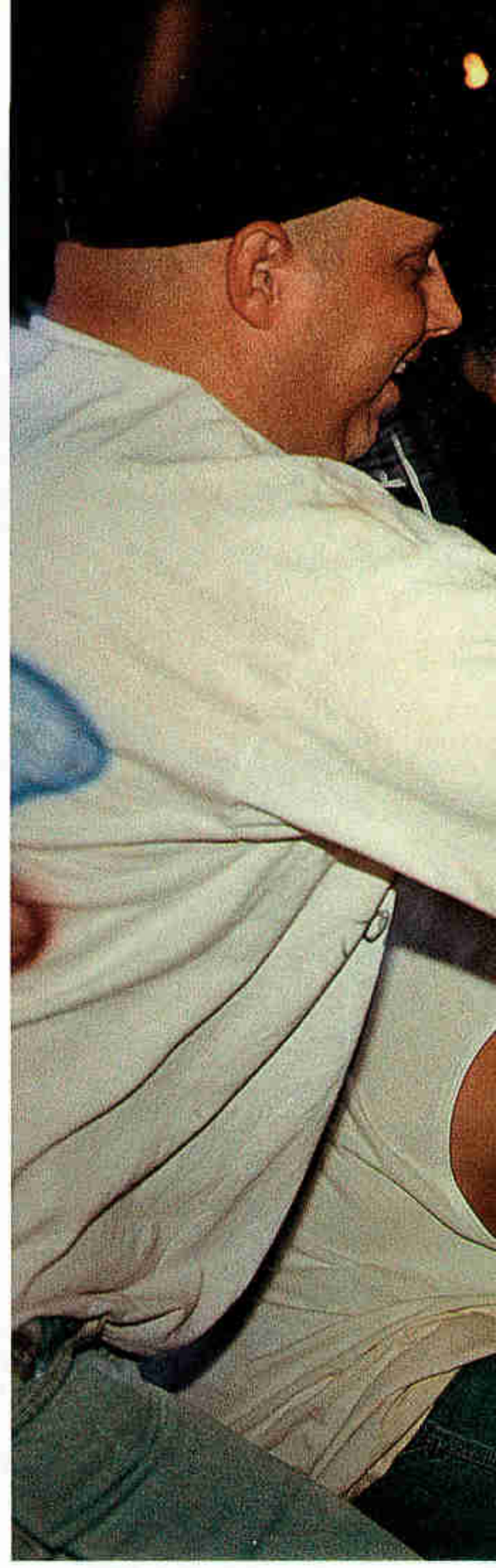

L1
PEPSI
Terry McCoolls
Joe Wyatt Racing
54
54
RACER WALSH
LRH
Leagon's Racing Heads, Inc.

This is not to say that everyone at Cherokee always gets along, only that they're close. Last season a top driver named Ronnie Sewell came within an inch of being murdered when he was grabbed from behind after a fight and slashed from his collarbone to his ear but was back racing two months later. And a couple of years ago there was a brawl that took an hour and 40 state troopers to quell. When I ask Ernie Elkins, a suave, silver-haired good ol' boy sitting in the grandstand wearing ostrich cowboy boots and a baseball cap, how many fights there have been this year, he says in his basso profundo drawl, "Well, let's see, Peter, how many races have there been?" Elkins says he used to try to break up the fights, until he realized they were good for business.

Over the next hour the sun dips low and the night comes up, bringing with it the damp pungent scent of earth and clay. The field outside the track fills with pickups and the infield with drivers and crews and their girlfriends, with their knowing indulgent smiles and gratifyingly tight jeans. Coyle conducts a no-nonsense drivers meeting, and Faulkner nudges fans toward the concessions, and Van Craig, the assistant flagman who is conspicuous not only for wearing a feather in his cap but also for being the only black person in the place, throws candy to the kids.

Suddenly the night is all the way up, and you can see the headlights of the pickups lined up in the grass on the far side of the track getting ready to watch for free, and a local minister is offering his benediction. "Thank you, Lord, for giving us the great sport of stock car racing, but most of all for giving us your son, Jesus Christ."

A Saturday night of racing is about to begin.



A revved-up victory celebration ends with driver Dennis Franklin being flung into the mud by his crew, a dirt-track baptism for first-time winners at Cherokee. Taking home a plastic trophy and a check for $2,000, Franklin, 23, expects bigger paydays ahead. "I'll give dirt two or three more years and then go to asphalt. That's where the money is." No other career will do for Franklin. "I've never worked a day in my life," he marvels. "All I've ever done is race."

BUILT ON THE SIDE OF A HILL in Harrisburg, North Carolina, the headquarters of Hendrick Motorsports is little more than an hour's drive from Cherokee, yet it seems to reside in another century. Although NASCAR teams like to refer to their racing facilities as "shops," there's little garage-like about this pristine 120,000-square-foot automotive laboratory. Rick Hendrick, the 48-year-old owner of NASCAR's most successful racing team in recent years and employer of Jeff Gordon, the first driver whose marketability has transcended the stock car world, casually walks me through the eight-building complex. As we move among the different wings devoted exclusively to chassis, engine, and bodywork, I'm reminded of the R&D excursion at the start of the old James Bond movies.

Hendrick, the first to employ university-trained engineers in every division and the first to train ex-football linemen to handle the heavy labor in the pits, is transforming his sport, inviting rivals to follow his lead or get lapped. The original idea of a stock car was a vehicle raced as is, straight off the showroom floor, but a visit to Hendrick Motorsports proves that it's been a very long time since there was anything "stock" about stock car racing. Except for basic components, such as engine blocks, he builds his race cars from scratch and, if pressed, is capable of turning a new one out in ten days. Junior Johnson told me that one of the reasons he dropped out of



racing in 1995 was that competing with owners like Hendrick "felt like pushing water uphill."

Like most team owners, Hendrick, a New South "Gatsby" who wears a long camel-hair coat and felt fedora against the February chill, made his fortune elsewhere. According to the PR staffer who accompanies us, he is the founder of the second largest auto dealer network in the country, with 4,500 employees and annual revenues of 2.4 billion dollars, not to mention the model for a character in the Tom Cruise stock car movie *Days of Thunder.* The 35 million dollars he spends every year to go racing, however, comes from the even deeper pockets of sponsors like DuPont, Kellogg, and Budweiser.

Stock car racing has gentrified itself with the deluge of money from corporations, which have found that the ferocious loyalty of racing fans extends, no questions asked, to the products whose logos blanket the cars. But the sport would never have looked presentable enough to catch this windfall were it not for the enormous investment of R.J. Reynolds.

Coincidentally Junior Johnson, who helped invent stock car racing with his fearless deliveries of America's other most lucrative vice, also brought tobacco into the fold. In 1970 Johnson, in need of $800,000 to compete for the season, called on some Reynolds executives. The cigarette giant, which had just been barred from advertising on television, was looking for someplace to park tens of millions of dollars a year. After Johnson introduced them to the founder of NASCAR, Bill France, they decided to sponsor the whole sport. Now every driver pursues the Winston Cup championship, which for three years in a row has been won by a driver on the Hendrick team, and at NASCAR races they give away cigarettes in the pressroom.

To maintain parity and keep the cars from


WELCOME
PEPSI



■ Champagne days may follow, but on a sweaty August night at a small dirt track Clint Elkins, the South Carolina champion in his class, makes do with a lonely splash of water after a win. While the track's motto evokes the old, rough-and-ready image of stock car racing, the new breed of top drivers must be squeaky clean to keep sponsors happy.

flying into the stands, the NASCAR rule makers continually come up with technical impediments to slow them down, and teams spend millions of dollars in search of ways to circumvent them. The result has been a standoff, with the top speed at the faster tracks like Daytona staying put at just below 200 miles an hour. On the day of my visit Hendrick's people were scurrying to ready the team's three cars for the Daytona 500 while trying to find a way to deal with new rules making it harder to keep cars down and out of the wind. Ray Evernham, Gordon's crew chief, says his team has thrown hundreds of hours at the problem, but he won't divulge specifics.

Protecting secrets is an obsession shared by all the teams, and to hear owners talk, Charlotte has more moles and snitches and double agents than Cold War London. "We work too hard to get an advantage to let someone give it away," says Hendrick. "That's why we don't let any single person work on the whole engine."

Hendrick is soft-spoken and personable, leaving his PR man to handle the distasteful bragging. Not in any way does he betray the fact that within the past few weeks he has been diagnosed with leukemia and indicted on 15 counts for illegal actions connected with his auto dealerships. Several months later he will plead guilty to mail fraud.

IF ANYONE has a chance to spin himself out of the red muck of a Carolina track onto the gold-lined streets of NASCAR, it's Clint Elkins. Part of it is the advantage of being the son of Cherokee Speedway's promoter, Ernie Elkins, whose connections will improve his chances of getting the sponsorship he'll need if he's going to get much further. But most of it is his own considerable talent and ambition and charm. A small handsome fellow in the Gordon mold, with some of his father's conversational gift, Elkins wants it bad and knows that getting a ride is just as much about looking and sounding right as driving expertise.

"You got to find a way to be at six places at once," he says, "so you can be at the one place at the one time where you meet the person who's going to remember you six months later when he needs someone to drive his race car." Although Elkins is only in his second year of racing, he already has all the standard memory aids, including the Clint Elkins trading card, T-shirt, and baseball cap.

This summer Elkins drove a modified open-wheeled race car in the competitive United Mid-American Promoters (U.M.P.) division. With its 500-horsepower engine, light weight, and small thin tires, it's a particularly loose and ornery handler, but Elkins had an excellent season. He won ten races, the Cherokee track title, and the South Carolina state championship, which carries with it an invitation to the national dirt championships in Eldora, Ohio.

But as much as Ernie is hyping and grooming his son, he's also trying to rein him in. "You got to prove you're the big dog at your own place," he says, "before you take on the world." Clint, who lives in a trailer home on his father's 300-acre farm in Lincolnton, North Carolina, doesn't see it that way. "This year Jeff Smith has done just OK at Cherokee but won five out of six races in Fayetteville. Should he have waited to go to Fayetteville until he had dominated at Cherokee? Of course not. Besides, I ain't getting any younger."

"Early 30s would be a perfect time to get to NASCAR," responds Ernie, who once, after watching Clint flip his car during a race, tried to persuade him to take up golf instead.

The fallout of this minor generational discrepancy is that Ernie is not going to pay for Clint to get out to Eldora, and so his only chance to make the trip is by winning the big $5,000 U.M.P. race at Cherokee in late September. Wanting to see how he does, I make one last trip to Gaffney.

Before the race Clint is serious but hardly grim, checking the tire pressure on his skinny Hoosier tires and making sure his brand-new sheet-metal body is bolted on tight. He shows me a new decal he's added to his collection, "Rage Against the Machine," the name of a hard-core alternative band. "Anything to give the car a little personality," Clint says, "and show that all Carolina dirt-track racers aren't rednecks." His mom, who has a beauty salon, sits protectively on a folding chair beside the car, while his dad and stepmom look down from the rickety wooden grandstand.

Unfortunately for Clint, his prospects tonight aren't good. A blown engine in the

■ Drivers at East Lincoln look forward to meeting Stephanie Bass. She's the one who hands out trophies. After a day at the speedway, few folks go away unhappy. As a fan says, "You don't meet no strangers at a dirt track."



qualifying race the week before means he's starting 24th of 27 cars, and the fat purse has attracted one of the strongest U.M.P. fields in the country, including the Owens brothers from Tennessee. Nevertheless, when Bruce Coyle rips down the green flag, Elkins hurls himself at the pack like a terrier attacking a mailman's leg, refusing to let go no matter how bad of a beating he's got to endure.

Cherokee is like a river. The condition of the clay changes dramatically from week to week depending on the weather, and a young driver has to learn to read the dirt. Two rainless months this summer left the track almost unraceable, but Elkins says the previous week's rain has made the surface much tackier. Still, he crashes four times in the first dozen laps, in each case when he is struck from behind as he slides sideways between turns one and two of the egg-shaped track. But every time he simply gets a member of his crew to pull the metal body away from his tires and makes another run. From where I'm sitting, at the bottom of the bleachers on my one-dollar rented cushion, the noise is almost unbearable, and every time the pack sweeps out of turn four, the spray of red clay is so heavy I have to shield my eyes.

After 24 laps of the 25-lap race, Elkins has worked his way up to fourth. If he can pass three more cars, two of which are driven by the Owenses and one by local rival Heath Stevens, he has a ticket to Eldora. But on the last lap, as he tries to force his way around Stevens, he gets knocked hard into the wall. This time the damage is too extensive to keep going.

"I tore up the front end so bad I couldn't fix it in time for Eldora even if I had a way to get out there," says Elkins after the race. "I'm just going to put it on the jack, throw a tarp over it, and wait till next year."

As I head to my car with my ears ringing and my eyes burning and the remains of one too many track burgers rising in my chest, I'm feeling about the same way. □

Share your thoughts about stock car racing in our online forum at www.nationalgeographic.com.



Perched amid smoke and stinging bees, Raji shikari, *or hunters, gather honeycombs 60 feet above the ground. Bundles of burning sticks raise a cloud of bees, as Bahadur, at right, passes a hook through a piece of nest heavy with larvae before lowering it to helpers. Forty years ago the Raji moved freely through the forest, surviving off its bounty. Now much of the forest has been cut, for farms, wood, and fodder, and the remaining trees belong to others.*

Golden Harvest *of the* RAJI

Wrapped against a storm of bees, Raji girls in Nepal watch a hunter harvest a nest high in a tree. Once nomads, some Raji still wander a dwindling forest, moving with the blooms in search of honey.





Article and photographs by ERIC VALLI

The trunk of the silk-cotton tree was as wide as a bus. At its base, huddled figures fed leaves into smoldering fires, sending dense columns of smoke up through massive limbs. The smoke, intended to distract the bees, wrapped around two honey hunters 50 feet up. With little to protect them from the bees except their turbans, baggy shirts and pants, and swatches of handmade fishing net, they balanced on twisted branches to reach nests hanging below. The tree held at least 70 nests, with 60,000 or so bees in each one, and as the hunters crept closer to the honey, clouds of furious insects filled the air.



Watching from below, I felt a single bee bury itself in my hair. When I tried to dig it out, it stung me. Pain shot under my scalp like lightning. Other bees bounced off my face. A stranger reached out his arm to guide me under his shawl as the roar of the bees grew as loud as a waterfall.

After months of searching, I had finally found a troop of Raji, one of the last ethnic groups in Nepal still living in the forest as semi-nomads. Traveling for months in family bands, the Raji follow the bees as they migrate through the lowlands with the blossoming of flowers. Following this band, I would learn what it means to be as poor as dirt—and as rich as the earth.

THE FIRST TIME I saw a group of Raji, I was getting a shave beneath a tree in a village in southern Nepal. As the barber scraped his razor across my neck, I looked at the old mirror nailed to the tree and saw their reflections passing by—seven in all, men, women, and children. Their shabby clothes were falling off their bodies. Several carried tin containers on their heads. Two had shoes.

"Go away. We don't want any," a round-bellied merchant barked at them as they stood outside his shop in the blazing sun. They vanished as quickly as they had appeared.

"Who was that?" I later asked the merchant.

"Drinkers, gamblers, those Raji are good-for-nothing," he said. "Let them keep their honey."

To the townspeople the Raji are vagabonds. Little more than 3,000 live in all of Nepal, mostly in the tarai, a marshland and forest that once stretched for hundreds of miles along the southern border with India. Forty years ago these woodlands teemed with tigers and elephants and malaria-carrying mosquitoes, but now much of the land is open field. Some Nepalese call the Raji *beriko manche*, which means the "bee people." During the 1970s the government gave them land on which to settle. But many lost title to their properties by running up debts or simply abandoning the land. A few still lived in the forest.

"Like animals," said the merchant.

When I returned to my home in Kathmandu, I could find little reliable information about the Raji. The last time any anthropologist spent time with them was in the late 1970s. Then, on a jeep trip with my Sherpa friend Lakpa in 1995, I happened to meet a Raji man trading honey for salt at a tea shop. He told me his name was Mama, and he promised to take Lakpa and me to where a group was camped. He had a playful grin on his weathered face.

"Where's the camp?" I asked.

"Where the bees are," he said.

"And where are the bees?"

"Where the flowers are."

He led us to a nearby patch of forest, where his companions were hard at work climbing a giant silk-cotton tree. From their perches high in the branches the climbers lowered baskets of honeycomb to men and women waiting below, who then squeezed the golden liquid from the wax with their hands, filtered it, and poured it into containers to trade with villagers for rice, vegetables, or other needs.

At dusk, their work finished, the climbers spiraled down their ropes to the ground like spiders. One of them knelt beside me at our fire. Small and brawny, he wore torn trousers stained with honey. Despite the netting over his head, the bees had stung him severely. He had a dazed expression on his face. A boy sat down next to him and started to pluck out the stingers that lay buried in his skin like tiny arrows.

This was my introduction to Bahadur, the best honey hunter in the band. During my frequent visits over the next three



As did their hunter-gatherer ancestors, Raji women leave camp early carrying okas, *sticks wrapped with leaves and vines, which honey hunters will burn to drive off bees. Traditional Raji life depended on the tarai (right), a now vanishing subtropical forest. The Raji see the trees as female: Mysterious, protective, carriers of life.*



Wherever you find the bees, there you'll find the Raji.

—MAMA

years, he taught me much about the Raji way of life. He was 27 years old, the younger brother of Mama's wife. As a teenager he had entered into a semifeudal arrangement with a rich landowner to work in his fields. But after his father died, Bahadur paid debts to his landlord by selling his family's land. Homeless and without a rupee, Bahadur built a shack on the edge of a government forest, foraging to feed and clothe his wife and three children.

"When village people get hungry, they go to the market," he told me. "When a Raji gets hungry, he goes to the forest."

IN MY EARLY DAYS following the Raji, I found their habits maddening. Time and again Bahadur and his band would agree to meet me at a certain place but never show up. Sometimes it took me weeks or even months to find them again. Back then all I could see was their unreliability and poverty. I didn't understand that their lack of routine, their tendency to set off on trips on the spur of the moment, and even their reluctance to set aside for the future were all qualities that enabled them to survive in the forest as hunters.

Eventually Bahadur agreed to let me climb the trees with him to photograph the honey hunting (I would eventually climb more than 50). I remember well the first time. The tree, as tall as a 15-story building, held at least a hundred nests.

Bahadur was amused by my climbing gear—harness, carabiners, jumars, ropes, and leather gloves—without which I could not scale such a tree. By contrast, Bahadur's bare hands and feet moved like a whisper over the limbs. Within a few minutes he was high above me. Every move was meticulous, full of certainty, like a street child who knows every back alley of his neighborhood.

I asked Bahadur if anyone ever falls from the trees.

"Yes," he said. "You fall when your life is over."

Ten years ago in the central foothills of Nepal, I had photographed another group of honey hunters, the Gurung, who descended cliffs on ropes to reach the bees' nests. But these bees were more aggressive, and I was sweltering in my protective gear. My fingertips were numb, my legs were shaking, my progress was slow and painful. Every muscle was begging me to quit.

Above me Bahadur chiseled small stepping notches into the tree limb with an ax. Wood chips flew from the blade, bounced off my clothes, and dropped into the abyss. By now he was only an arm's length from the hive, whose dark surface rippled with thousands of bees. I rummaged for a lens in my camera bag.

Veiled in smoke, Krishna waits at the foot of a tree for Bahadur to lower his rope to retrieve the burning bundle. Like Krishna, Bahadur lives landless in the Raji homeland, a squatter in a government forest. Despised by newcomers from the hills who claim much of the land, Raji earn grudging respect as honey hunters, taking risks others refuse.

The first day of climbing season they offer white and red cotton, cloves, rice alcohol, and a rooster at a stone beneath a tree. They pray: "Here's our share; take this life; leave ours."

Based in Paris and Kathmandu, photographer ERIC VALLI covered another threatened ethnic group, the Gurung, for the November 1988 issue.





You fall when your life is over.

—BAHADUR



With no rope to stop his fall, Bahadur slices into a tree trunk, chiseling hand- and footholds with an ax blade. "When it becomes too steep, I cut my way up, but I'm not scared," he says. The first time he slipped, Bahadur plummeted 40 feet and sank thigh deep in the mud, uninjured. The second time he fell—last year—he broke his ankle. Several months later, still limping, he clambered into the trees again. Easing his way onto a narrow branch (right) with bare feet and hands, and protected only by a layer of clothing and a column of smoke, Bahadur confronts tens of thousands of bees.

Suddenly a bee flung itself against my face net, searching for a way in. Then another. And another. Soon the sky was hailing bees.

Bahadur continued to ascend the branch, protected somewhat by the smoke from his torch of smoldering leaves. My own torch had extinguished itself. Don't panic, I told myself, as a bee worked its way through my face netting. I squished it against my cheek, the pain racing like fire toward my eyes. Nearly a hundred feet above the ground I felt like I was drowning, drugged by the heat, the fear, the suffocating smoke, and the poison of the bees.

For a while I continued to take photographs. Yet every time I put the camera to my eye, I was stung by bees clinging to my face net. After my cheeks puffed up grotesquely, I had to retreat. I checked my harness and rope, then rappelled to the ground, feeling lucky to have been stung only 33 times.

There would be other days climbing with the Raji, fishing with them, traveling with them, sitting by their campfires. In the months to come I would play with their children and worry about their futures. I knew that as Nepal's forests continued to disappear, the Raji's ways would go with them. Most of them don't know how to read or how to deal with officials. Government rangers have knocked down their flimsy huts to keep them from squatting in the forests of their ancestors. I wished I could do more than document their vanishing lives.

Feeling as groggy as if I'd fought a boxing match, I sat beneath that first big tree I climbed and closed my eyes. Soon I felt fingers pulling out a stinger. It was Bahadur. I allowed him to finish his task, letting my head fall back just as he had done with the Raji boy the first day we met.

Hanging like huge, dark fruit over a mustard field, scores of nests thick with bees draw Bahadur, at left, and other Raji into Raja Simal, "king of the silk-cotton trees." Villagers gather below to beg honey. The giant tree belongs to a wealthy landowner, who, following tradition, takes half of whatever the Raji harvest.



Bees explode from a nest, fleeing the smoke of Bahadur's oka with a buzz that rises to a roar. Though made less aggressive by smoke, these bees, known for their ferocity, in mass attack can kill a man. To avoid their stings, other honey hunters cut tree limbs so that combs come smashing down. Raji leave limbs intact: Within an hour the bees return, as do the Raji, season after season.



When village people get hungry, they go to the market. When a Raji gets hungry, he goes to the forest.

—BAHADUR







SWEET DESSERTS

Gently paying out rope, Bahadur lowers a chunk of milky white wax studded with bee larvae (top left), which the Raji cook like scrambled eggs and season with salt and red pepper. Heavier loads descend in baskets, weighted with larvae and honey (bottom left), which Keta will carefully unhook. For every Raji in the tree, several wait below to process the honey, first squeezing it from the comb (above). The sticky liquid drips through bamboo filters into recycled cooking oil containers, which the Raji carry to villages along the Indian border. There honey sells for 50 to 60 Nepalese rupees a liter—about one dollar a quart. All members of the band share the money, using it to buy what they cannot collect or catch: clothes, nylon fishing line, steel fishhooks, and medicine. The wax they melt and sell. The pollen they use as a tonic for old people and new mothers or as a salve for wounds.

We begin our life by weaving a fishnet. We end our life before ever finishing it. We're always weaving a net and forever fixing it.

—PAGOU RAM

ON THE MOVE



Built in a day, shelters of branches and leaves serve as an island camp (below) for the 40 to 45 Raji in Bahadur's band during honey-hunting season. The surrounding river gives protection from tigers. In a few months monsoon rains will flood the river and carry off all signs of the camp. "Who knows where we are coming from?" wonders Maskey, a honey hunter (above), squatting by his son Jungli, whose mother died giving birth to him in the forest. After this photograph was made, Maskey also died, of an untreated fever, leaving Jungli to learn to climb alone. When flowers wither and bees migrate, the Raji travel the river to fish. After a 90-minute fight in the early morning darkness, Krishna (left) hauls in a catfish, reminder of the days when the Raji could live off such catches. Once, few people inhabited the fertile flat tarai, largely because of malaria. Starting in the 1950s, the government used pesticides such as DDT to open the area for settlement. It sold plots to land-hungry farmers from the hills and claimed whole forests for national parks. Most Raji given land failed as farmers and sold out to wealthy outsiders. Pagou Ram, an elder, describes the fate of the 3,000 Raji: "Before, we knew where the gods were. They were in the trees. Now there are no trees." When their world changed, Raji who had not feared precarious climbs cowered before new authorities—soldiers and police. "You know what scared us?" says an old honey hunter. "People with shoes."

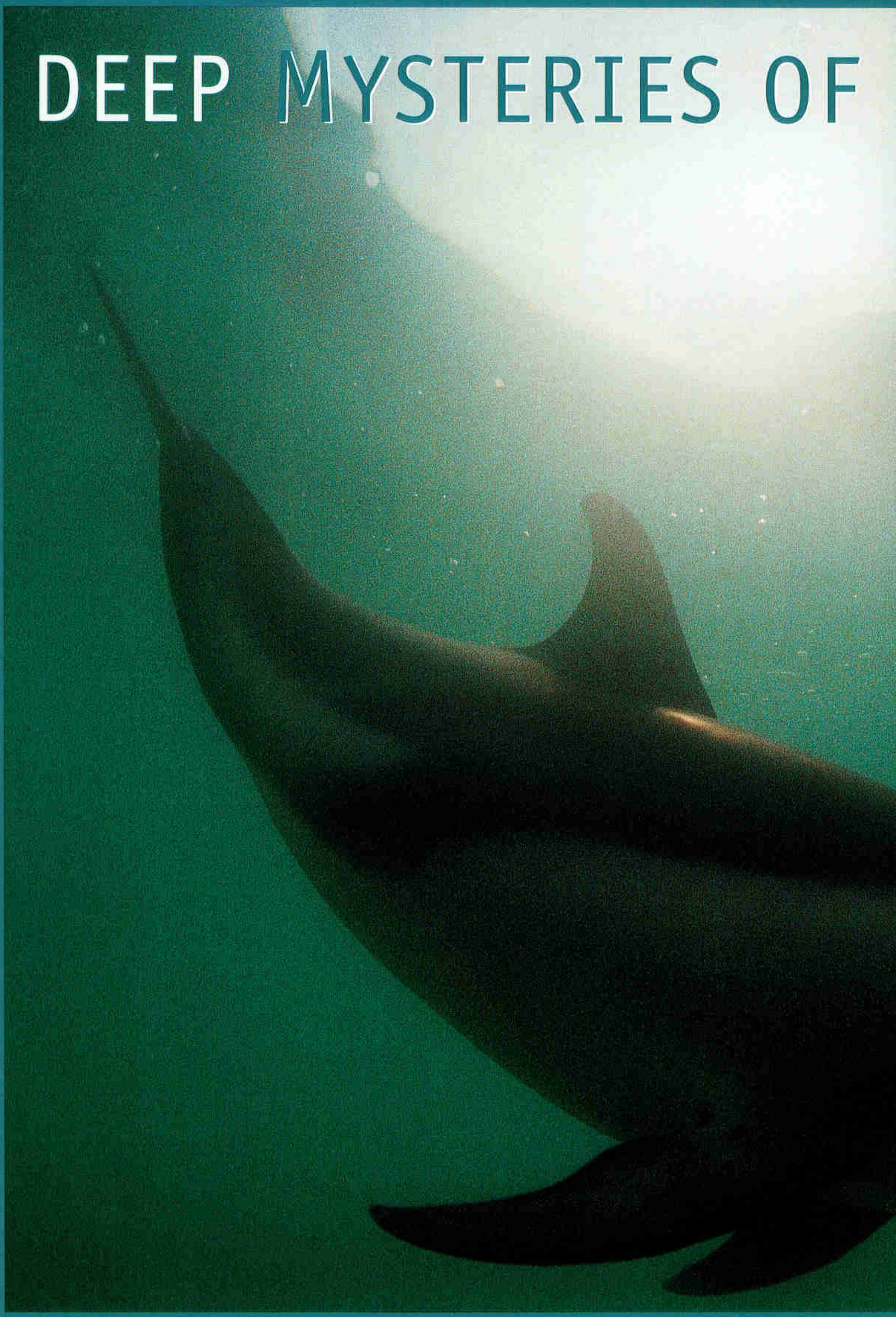






Poling upstream, Raji head to a new fishing camp with their belongings: blankets, rice, red peppers, a few pots, clothes. After centuries in the forest the Raji still struggle to pursue their old ways against strong currents of change. With many of the trees swept away, they cling to what remains. □

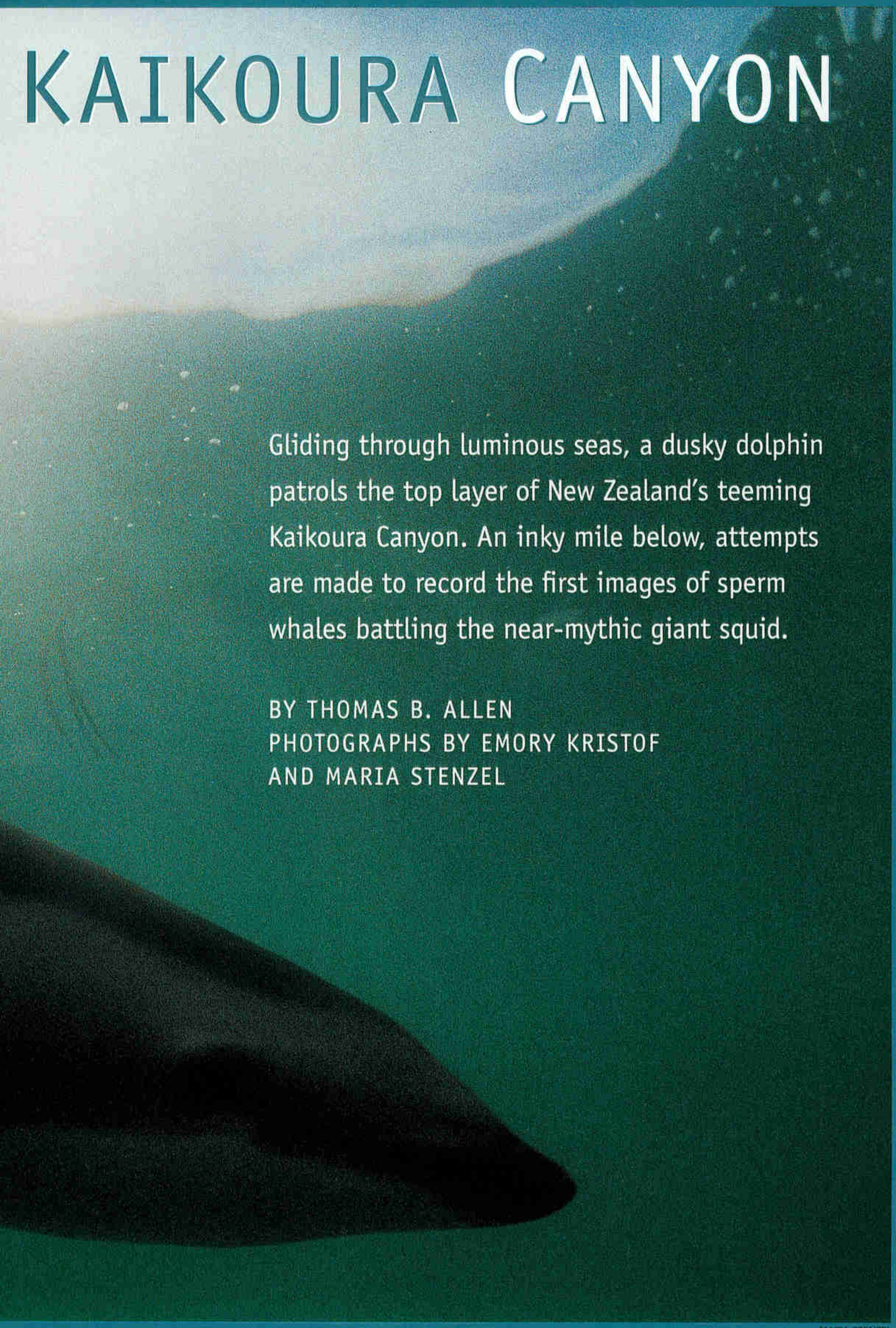
DEEP MYSTERIES OF



KAIKOURA CANYON

Gliding through luminous seas, a dusky dolphin patrols the top layer of New Zealand's teeming Kaikoura Canyon. An inky mile below, attempts are made to record the first images of sperm whales battling the near-mythic giant squid.

BY THOMAS B. ALLEN
PHOTOGRAPHS BY EMORY KRISTOF AND MARIA STENZEL



MARIA STENZEL

THE WHALE GLIDES beside us, a long black shadow pushing his own wave before him in the still sea. "Brilliant," says Wally Stone, using his favorite word for a sunny morning when the world narrows to a boat and shades of blue. We have been following the whale for about ten minutes, marking him by his wave and his occasional blow, which sends a sparkling plume skyward.

Now we see another wave, another plume. A second whale has surfaced directly in the path of the first and is swimming rapidly toward him. These 40-ton male sperm whales are on a collision course, two locomotives on one track.

As the whales near each other, they simultaneously dive. In a moment they burst from the sea, the head of the first whale buried like a fist in the underside of the newcomer. They veer off. The first whale swims on, undeterred. The newcomer remains as still as the sea.

For an instant I had been a rare witness to a primeval event. "A fight," Wally says. "All the sperm whales here are males, and they want space. That new one, he's young. He challenged the other guy, trying to get into his feeding area. No one was really hurt, except maybe hurt feelings." Wally talks about whales as if he knew them personally. And in a way he does.

Wally is a Maori, a descendant of native people who settled the Kaikoura Peninsula at least 800 years ago and joined their lives to the sea. He runs the Maori-owned Whale Watch enterprise, whose boats take people out to see the whales that live near the shore of Kaikoura, a onetime whaling center on the northeast coast of New Zealand's South Island. Just offshore, sperm whales search for prey, including a legendary creature that no one has ever seen in its deep-sea realm—the giant squid.

I am here with an expedition organized by the National Geographic Society and involving more than a dozen scientists. The plan: To find sperm whales, whose habitat is within easy reach of shore here, and have the whales lead us to giant squid.

Kaikoura is one of the best places in the world to seek the elusive squid, and the best man to lead a search for it is the expedition's principal scientist, Clyde F. E. Roper, a marine biologist at the Smithsonian Institution's National Museum of Natural History. Colleagues call him Dr. Squid. Drawn to the sea since he was a teenage lobsterman, Roper has devoted his 36-year career to the study of squid, octopuses, and cuttlefish, together known as cephalopods. The giant squid has been his most recent scientific passion.

Also seeking the giant squid is underwater photographer Emory Kristof, another lifelong seafarer. He wants to be the first person ever to

THOMAS B. ALLEN, a frequent contributor, is the author of books on subjects ranging from sharks to spies. EMORY KRISTOF, a former staff photographer, has searched for the *Titanic*, deep-sea vents, and the Loch Ness monster. MARIA STENZEL's photographic assignments for NATIONAL GEOGRAPHIC have included Las Vegas, Antarctic ice, beekeepers, and Walt Whitman.



MARIA STENZEL

As if showing the way, Kaikoura Peninsula points toward deep waters.
Over the past 125,000 years tectonic forces have lifted beaches here to form the peninsula's green hills. A legend of the Maori, New Zealand's indigenous people, says that an apprentice wanting to please the Creator put underwater mountains here, framing Kaikoura Canyon.

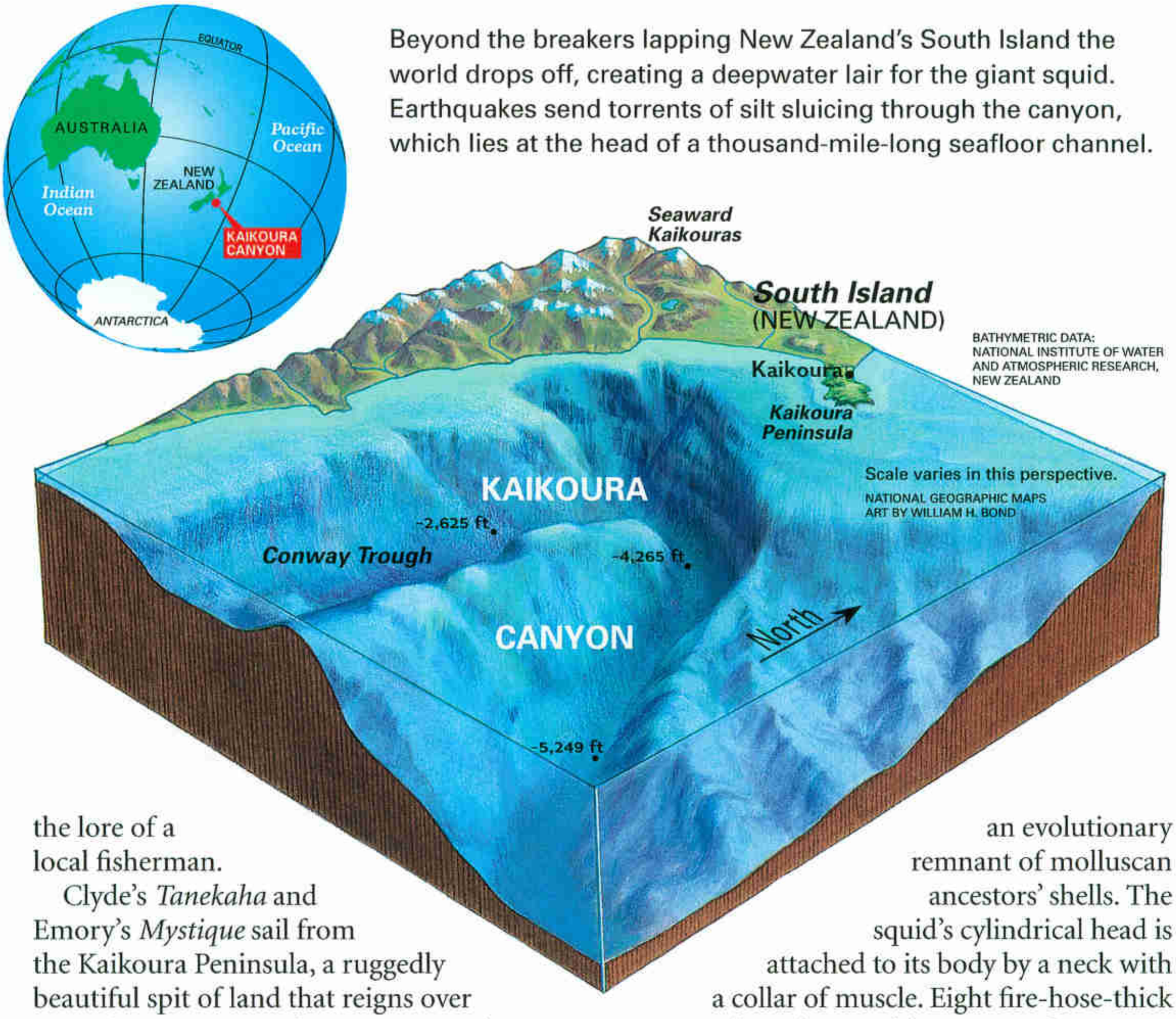
photograph the giant squid in its own habitat.

Scientist and photographer, they are united in purpose. But they are rivals, and each has his own method for finding the squid. They speak a different language: Clyde measures in metric and calls the giant squid by its Latin name, *Architeuthis*. Emory measures in feet and inches and calls creatures by their familiar names.

Clyde is on the *Tanekaha*, a fishing vessel carrying a seven-foot robot submarine with a video camera in its nose. A team led by James Bellingham of the Massachusetts Institute of Technology's Underwater Vehicles Laboratory operates the yellow sub, which Clyde sends out each day to search for "one of the last great mysteries of the sea." Emory is aboard the *Mystique*, a yacht adapted to raise and lower deep-sea camera rigs he calls rope cams.

The *Tanekaha* is jammed with scientists who tell academic anecdotes, talk about *Architeuthis*, eat sandwiches for lunch, and go ashore each night to a motel. On the more spacious *Mystique* a stereo blares, crewmen cook three delicious meals a day, and everyone lives on board. The *Tanekaha* sails to a scientific plan. The *Mystique* relies on Emory's instinct and

Beyond the breakers lapping New Zealand's South Island the world drops off, creating a deepwater lair for the giant squid. Earthquakes send torrents of silt sluicing through the canyon, which lies at the head of a thousand-mile-long seafloor channel.



the lore of a local fisherman.

Clyde's *Tanekaha* and Emory's *Mystique* sail from the Kaikoura Peninsula, a ruggedly beautiful spit of land that reigns over an undersea canyon where currents mix and well up, producing a broth rich in nutrients. Drawn to the food are creatures great and small, from tiny krill to the apex predator and prey, linked at the top of the food chain—the sperm whale and the giant squid.

A BEAST OF LEGEND since Aristotle's time, the giant squid is the ship-wrecking villain in Jules Verne's *20,000 Leagues Under the Sea* and the sea monster of sailors' tales. What is not legend comes from scientists' descriptions of the giant squid, based on the remains of about 200 animals trapped in nets or washed up on beaches around the world.

A year before our expedition arrived in Kaikoura, three dead giant squid were found in New Zealand waters. At the National Institute of Water and Atmospheric Research in Wellington, I touch the rubbery skin of a medium-size 26-footer. Even in death it has an aura of menace. Its boneless, torpedo-shaped body consists of a mantle of muscular tissue surrounding a translucent internal support called the gladius, an evolutionary remnant of molluscan ancestors' shells. The squid's cylindrical head is attached to its body by a neck with a collar of muscle. Eight fire-hose-thick arms and two longer, thinner tentacles emerge from the head like a bizarre crown. Hundreds of suckers, each pivoting on its own base, cover the inside of the arms. At the end of the tentacles are "clubs" lined with four rows of saw-toothed suckers that look like round little mouths encircled by tiny pointed teeth.

To eat, a squid shoots out its tentacles—"like bungee cords," Clyde says—and grasps prey, closing the tentacles like a pair of pliers and coiling them back to a parrotlike beak that cuts the prey into bite-size chunks. A raspy tongue flips the chunks down the esophagus, which, on the way to the stomach, passes through the brain. "If a giant squid takes too large a bite," Clyde says, "it will ream out its brain."

The largest measured giant squid, stranded on a New Zealand beach in 1880, stretched nearly 60 feet from the tip of its mantle to the tips of its 40-foot tentacles. It was judged to weigh about a ton. Its eyes, the largest of any animal, were about the size of a person's head. Clyde believes that the biggest squid, still out there in the deep, may grow to 75 feet. It takes a

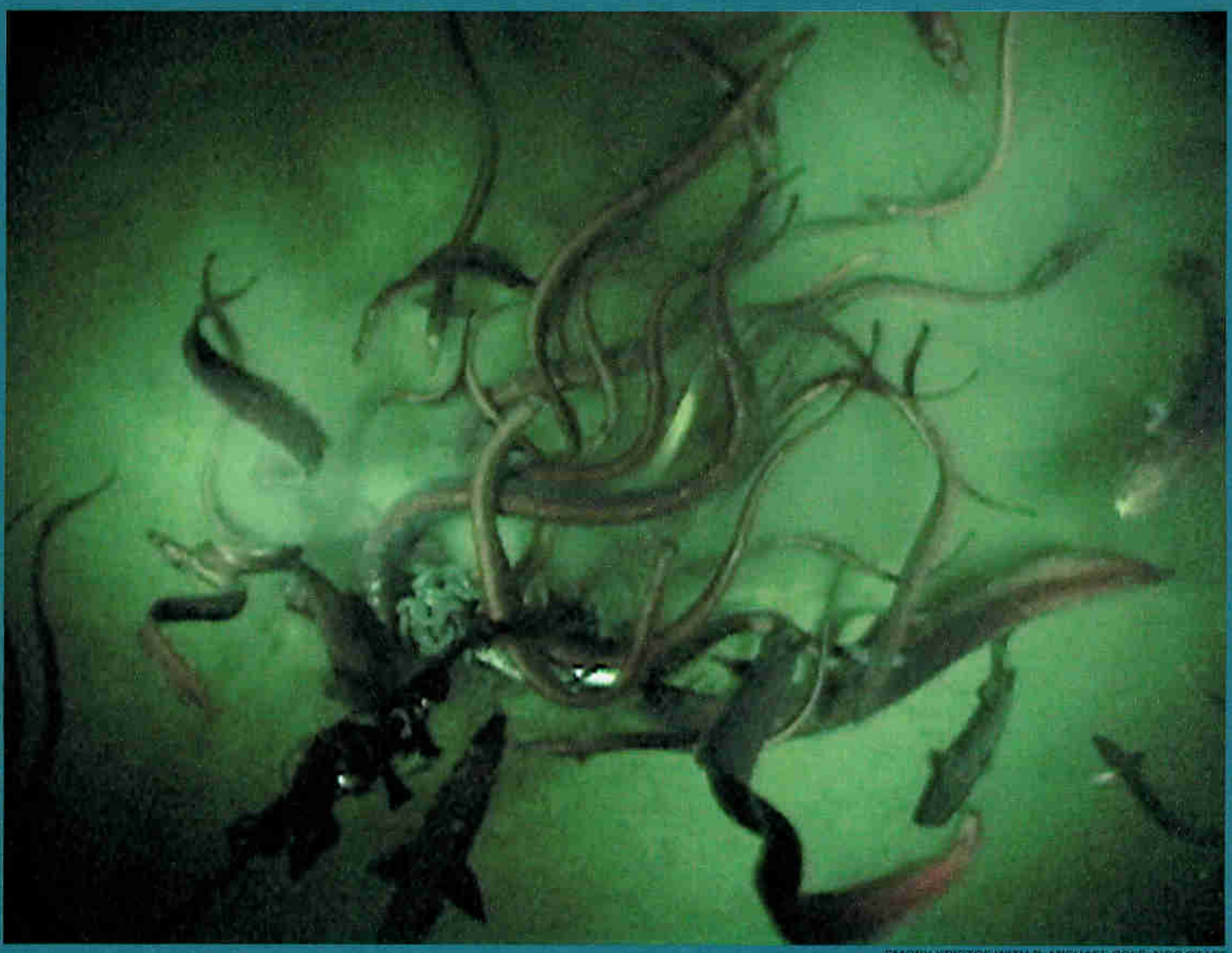
Fishing for Images With a Mile-long Line



MARIA STENZEL

Photographer Emory Kristof and his shipmates on the *Mystique* check the day's catch. Kristof plays back a digital videotape taken by his "rope cam," a photo rig lowered on a line into Kaikoura Canyon. Greg Stone, director of conservation for the New England Aquarium, gestures to show the size of a fish just seen on the monitor. Also on rope cam watch is Teddy Tucker, a trustee of the Bermuda Underwater Exploration Institute. During the rope cam's long dive, a computer program in the camera controls a four-hour on-off cycle of shutter, lights, and pumps that squirt out bait (barracuda liquefied in a blender).

Knowing that sperm whales prey on giant squid at great depths, Kristof sent the rope cam rigs down as far as a mile. The cameras saw no whale-squid encounters but did bring back images showing two species of eels and 15 other kinds of fish, including seven species of dogfish, a type of shark. At 5,000 feet (below), eels writhe into a knot around a dead barracuda tethered to a boom. Other eels, ribbonlike ling, spiny dogfish, and other small sharks swarm to the scent of bait. During a feeding frenzy, eels bite each other. But these sharks, satisfied with crumbs, usually act timidly polite.



EMORY KRISTOF WITH R. MICHAEL COLE, NGS STAFF

Struggle in the Deep: Squid vs. Shark



EMORY KRISTOF WITH R. MICHAEL COLE (ALL); COMPUTER ENHANCEMENT BY DOUG STERN AND BRIAN STRAUSS, NGS STAFF (ABOVE)





The rope cam captures an encounter never before photographed: a squid attacking a shark. About 2,400 feet down, while an arrow squid jets through a plume of liquid bait, a spiny dogfish shark ventures too close. The squid swiftly wraps its eight arms and two tentacles around the intruder, perhaps in reflex (above left). As the shark struggles, the squid (here color-enhanced for clarity) gets its sucker-studded tentacles and arms around the shark's vulnerable gill slits in a move that could suffocate the shark (top). An instant later the attack ends in a draw (above right). The brief encounter may evoke the life-or-death struggle that occurs when a sperm whale is the attacker and the giant squid is the prey.

These images were among thousands recorded by the rope cam at depths ranging from 600 feet to a mile. The rig, which began as a 35-mm underwater camera hung on a rope, evolved into

ART BY JOHN D. DAWSON

a complex device (above) carrying a computer-operated digital video camera, lights, and a boom tipped with two lures: a slab of fish and a tube that squirts liquid bait. The battling squid and shark were drawn to the rope cam by an enzyme-based super-bait that gave off powerful essence of barracuda.

big predator to eat such big prey, and the sperm whale, the world's biggest toothed mammal, certainly qualifies. Males can grow to more than 60 feet, females to nearly 40. A male might weigh as much as 55 tons.

Clyde's colleague Malcolm Clarke is as intrigued by the sperm whale as Clyde is by the giant squid. Malcolm's work began 45 years ago when he went to Antarctica as a whaling inspector, hoping to study the anatomy of sperm whales and what they eat.

A New Zealand scientist, knowing Malcolm is here on the expedition, has sent him a package containing some of the stomach contents from a recently beached sperm whale. The odoriferous brown liquid is thick with beaks—two pairs of uppers and lowers from giant squid, as well as some 3,000 beaks from other squid species. Malcolm and Clyde explain that a greasy substance coats the sharp beaks as they collect in a whale's digestive tract. Periodically the whale excretes the substance, and it washes ashore. This is ambergris, which perfumers add to fine perfume to retain its essence.

AT CAPE FAREWELL, on a broad tidal flat about 140 miles north of Kaikoura, five sperm whales have mysteriously stranded. For no apparent reason they ventured close to shore and kept moving along the shallows, even as the tide carried away the sea beneath them and left them to die.

Expedition scientists decide to fly to Cape Farewell. Adam Frankel, a Cornell University specialist in whale acoustic behavior, wants to record the sounds of the dying whales with directional microphones. He hopes to find out how whales make and amplify sounds so powerful they can be recorded miles away.

Adam hesitates to put human words to whale sounds, but after talking to him I wonder if they are saying, "I'm here" or "I'm hungry" or "I'm frightened." At Cape Farewell, by one theory, a whale clicked a distress call—perhaps something like "I'm frightened"—and the other four came to help.

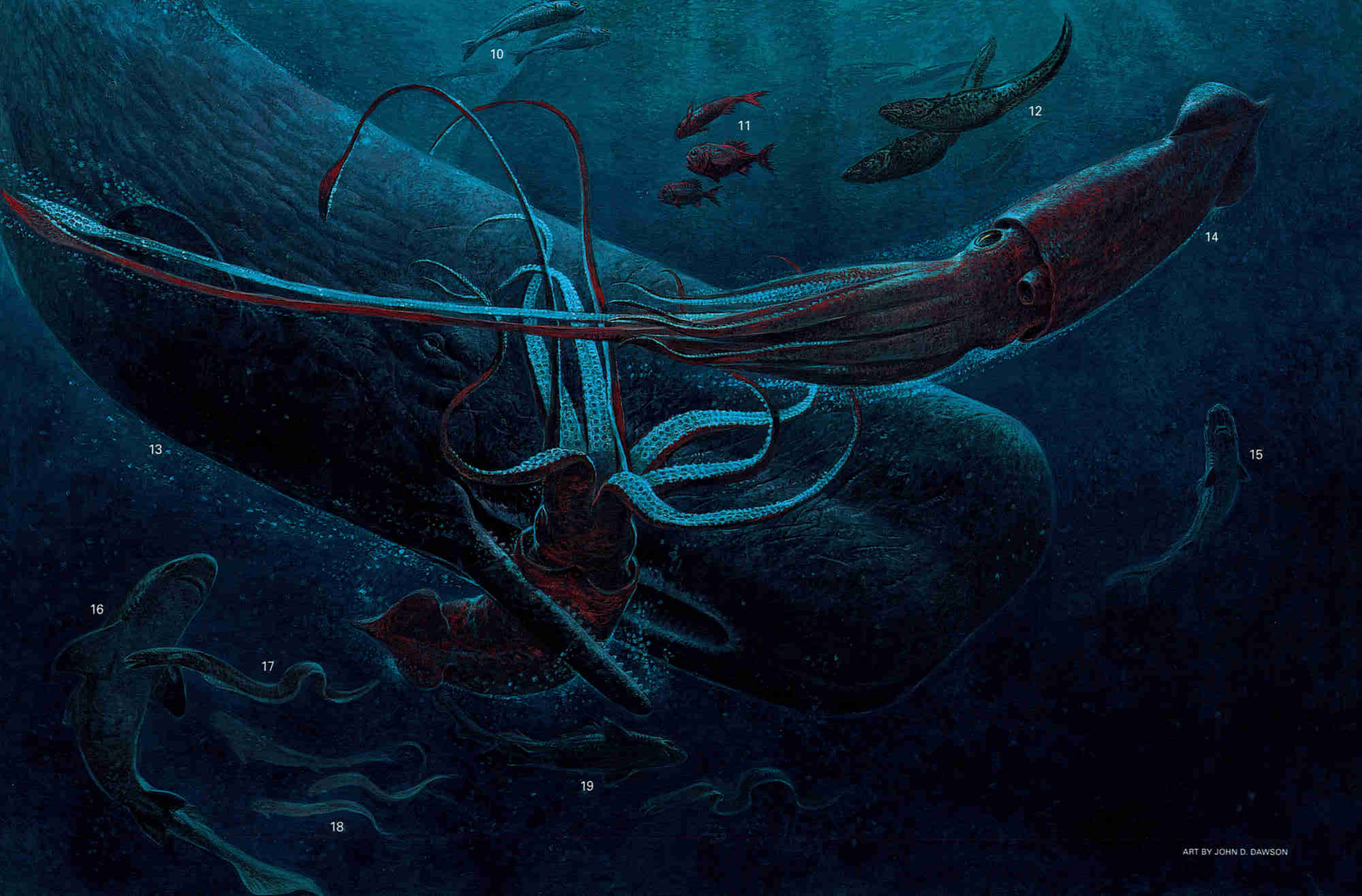
At dawn the next day, in a cold rain, I walk among the dead whales, feeling that unexpected sadness kindled by the untimely death of a stranger. The scientists are also saddened, but, like homicide detectives, they concentrate on reading the bodies for clues.

They do not solve the mystery of the whales'

A Grand Canyon for Life

The Maori called their fishing ground *kai-koura,* "feast of crayfish," for the abundant crustaceans that hid in the rocky shallows. The ultimate source of the feast lies just offshore, where upwelling currents rich in nutrients sustain a food chain that coils from the sunlit surface to the darkened depths. Near the top of the canyon red clouds of tiny lobster krill are pursued by schools of arrow squid. The squid in turn become food for pilot whales. Eels and long-bodied ling, denizens of the deep, see what no scientist yet has witnessed: sperm whales preying on giant squid. This portrayal of the encounter is based on scar patterns left on whales by squid tentacles.

1. Octopus *(Pinnoctopus cordiformis)*
2. New Zealand fur seal *(Arctocephalus forsteri)*
3. Lobster krill *(Munida gregaria)*
4. Albacore tuna *(Thunnus alalunga)*
5. Blue shark *(Prionace glauca)*
6. Dusky dolphin *(Lagenorhynchus obscurus)*
7. Arrow squid *(Nototodarus sloanii)*
8. Mako shark *(Isurus oxyrinchus)*
9. Long-finned pilot whale *(Globicephala melaena)*
10. Ribaldo *(Mora moro)*
11. Orange roughy *(Hoplostethus atlanticus)*
12. Ling *(Genypterus blacodes)*
13. Sperm whale *(Physeter macrocephalus)*
14. Giant squid *(Architeuthis* sp.*)*
15. Lucifer dogfish *(Etmopterus lucifer)*
16. Plunket shark *(Scymnodon plunketi)*
17. Basketwork eel *(Diastobranchus capensis)*
18. Snubnosed eel *(Simenchelys parasiticus)*
19. Spiny dogfish *(Centrophorus squamosus)*



ART BY JOHN D. DAWSON



Mighty even in death, sperm whales succumb on the sands of Cape Farewell.
This male and four others beached for no known reason and were crushed by the unsupported weight of their 40-ton bodies. Scars on their heads match saw-toothed suckers of tentacles, evidence that giant squid, held in huge jaws, lashed the whales that ate them.

deaths, but on every head, around the jaws, they find the signs of the giant squid: arrays of round scars left by saw-toothed suckers. Looking at those many circles, I can imagine a squid flailing its tentacles and tearing at the whale's head in a desperate attempt to fight off death.

A sperm whale eats about a ton of food a day, most of it squid. By Malcolm's estimate, that means sperm whales worldwide consume more than 120 million tons of squid a year.

Where, then, are the giant squid of Kaikoura? To find them, sperm whales must plunge into the depths, which could mean dives of 3,000 to 5,000 feet. Were the Kaikoura whales diving that deep? Adam is trying to find out.

When the *Tanekaha* arrives at a likely spot to record a sperm whale dive, Adam lowers his listening gear—four hydrophones hung on a cable. The sound wave of a sperm whale's click reaches each hydrophone at a different time. By measuring those intervals in milliseconds, Adam can calculate the source of the click and build a profile of the whale's dive.

"How sperm whales forage is an important question," Adam says. "How deep are the animals diving? What prey is at that level?"



JOHN ANDERSON

As weeks pass without a sighting of *Architeuthis*, Clyde and Emory grow increasingly isolated from each other. Rivalry is evolving into something close to obsession. Clyde, with his salt-and-pepper beard and New Hampshire accent, brings to mind Captain Ahab, the relentless pursuer of Moby Dick. Emory, as whiskery and relentless as Ahab, is determined to get the world's first image of a giant squid in its domain. But his prey continues to elude him.

Wally Stone of Whale Watch suggests a new place to hunt. On a chart he points to a seamount that rises 4,600 feet above the seafloor, with its top about 800 feet below the surface. In the waters over the seamount, Wally says, whale-watchers have often seen a whale they named Spotty because he had so many scars from feeding on giant squid. Clyde, in a tense summit meeting with Emory, agrees that this sounds like a plausible habitat for giant squid.

So we have a new plan: Find Spotty, and we might find the giant squid. And Emory's rope cams will carry something new.

Previously the rope cams' bait jugs had been full of liquefied barracuda. Now Richard Zimmer-Faust, of the University of California at Los Angeles, arrives on the *Mystique* with his contribution to the expedition: superbait.

A specialist in sensory biology, Dick finds out what molecules lure animals to food and then creates a laboratory model of that attractant. For the rope cams he provides essence of barracuda. The concentrated attractant will, it is hoped, seem a huge and miraculous feast to a hungry giant squid.

In the final days of the expedition *Mystique* sails repeatedly to Spotty's lair and repeatedly drops rope cams with alluring superbait.

Spotty never appears. But the superbait does produce an astounding scene, never before photographed. We all watch it—Emory and Clyde side by side, gasping at what they see on the *Mystique*'s VCR. At a depth of about 2,400 feet, arrow squid, each about two feet long, jet through the plume that is spewing from the bait jugs. A three-foot shark, known as a spiny dogfish, swims into the fringe of the plume. Suddenly a squid shoots toward the shark and attacks, wrapping its arms and tentacles around the shark's head and gills.

The giant squid is not found, but there are consolations: Emory has unprecedented video that may show, in miniature, how a giant squid would struggle when attacked by a sperm whale. There also are other achievements that will someday appear in scientific journals—what we learn from recordings of whale dives, from the observation of whales' head-to-head combat, from the examination of the whales stranded at Cape Farewell. And for Clyde there is precious scientific evidence—the beaks in the odoriferous liquid, the squid sucker marks on the stranded whales—that *Architeuthis* does indeed live in these depths. Dr. Squid has not given up. On the last days of this expedition he is laying out plans for the next. □

Read the author's dispatches from the field at www.nationalgeographic.com, or order a video about the search for the giant squid by calling 1-800-627-5162.

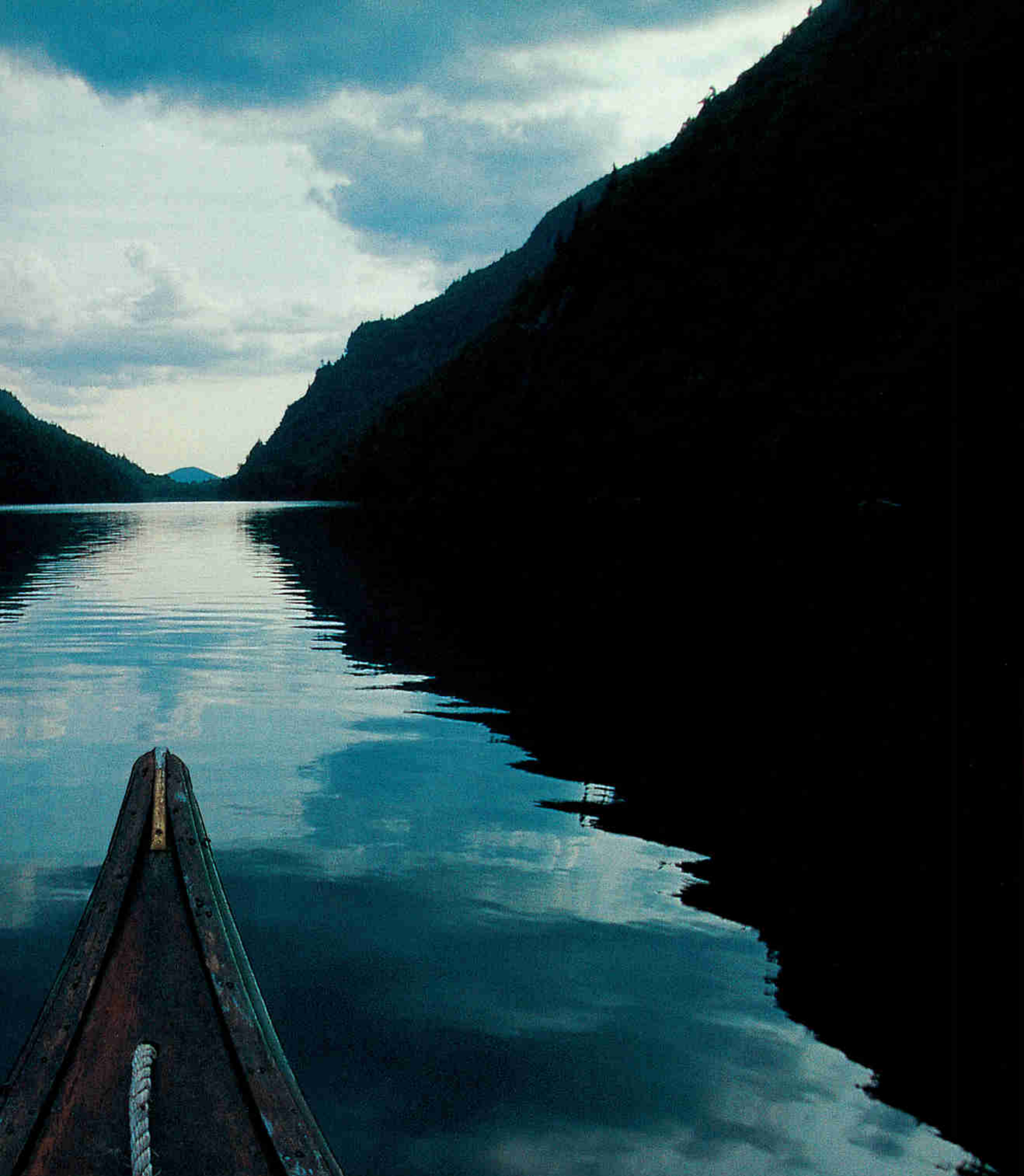
A SPECIAL PLACE

Adirondack High

By JOHN G. MITCHELL
SENIOR ASSISTANT EDITOR

Photographs by MARIA STENZEL

Stop paddling and savor the small things: the scent of balsam and pine, the splash of a beaver, a loon's cry. Rolling across nearly six million acres in upstate New York, the Adirondacks—mountains and state park—seduce not with a shout but with a wildness that often speaks no louder than a whisper.



A SPECIAL PLACE

IF YOU KNEW where to look, you'd find Joe's place back there at the edge of the field, hiding behind the conifers. It's that shingle-brown cottage with the green trim, a color combination once thought to be as obligatory here in the Adirondacks of upper New York State as two other signature details—a fireplace made of river boulders and a porch with a view. Joe's has it all.

From the porch the view was magnificent when I first took it in almost 40 years ago. The pines and spruces and hemlocks were youngsters then. You could look beyond them to the mountains at sundown and see the last light scooting up the ledges of Noonmark and over the landslide scars on the face of the Giant of the Valley. Now the aging evergreens have nearly shut out Giant; aimed to shut out Noonmark too, until Joe's people put a saw blade to the offending limbs. You can't have it both ways. Gain a view, lose a piece of privacy.

As much as Joe liked his privacy, he was generous to a fault about sharing the place when it wasn't occupied by members of his tribe. My own tribe rarely missed an opportunity. In fact, there were so many opportunities, Joe's slice of the Adirondack country, the so-called High Peaks, presently became the center of gravity on which we balanced the worth of each passing year. But that was some time ago, and now the opportunities are less frequent. So we're taking this one for the memories, pulling the old rocker out on the porch, letting the last light carry our fingers across the yellowed pages of remembrance.

The "Adirondacks." What a curious word. Sometimes you see it without the *k* or the *c*. Sometimes scholars squabble over the origin of the word, though most now agree it came to us phonetically off the Iroquois tongue. By and by, some paleface scout applied the name to this mountain range, which stands geologically aloof from the Appalachian highlands of the eastern United States. Next, the word was appropriated to define an entire region stretching from the outliers of Utica and Glens Falls north almost to the Canadian border, from Lake Champlain west some 90 miles across the High Peaks and a forested upland of rounded hills, U-shaped valleys, and sparkling lakes.

A shade more than a century ago, people began to place such high value on these woods and waters that the lawmakers of New York were moved to protect them. They drew a line around the region and declared it a park. Not that it would be a park in the conventional sense, for much of the land then was in private hands, and more than half still is. But the lands that the state owned, or would acquire, were to be more than parklike. Under the state constitution they were to be "forever kept as wild forest lands," never to be "leased, sold or exchanged, or be taken by any corporation, public or private. . . ."

So here is our Adirondack Park, much enlarged from its original 1892 configuration, more than 9,000 square miles of it, big enough to swallow almost all of Vermont, but juggling less than a quarter of Vermont's population.

Finally, as if it weren't enough that the same name should be shared by a range, a region, and a park, the singular Adirondack came to identify a whole genre of idiosyncratic leisure artifacts—slant-back chairs, cedar-plank guide

"In beauty of scenery, in health-giving qualities, in the easy and romantic manner of its sporting, it is *a paradise," wrote the Reverend William H. H. Murray in 1869. His best-selling book* Adventures in the Wilderness *converted hordes of urban skeptics into Adirondack believers.*

MARIA STENZEL began her career with the magazine as a film reviewer in the photo department. This is her eighth photographic assignment for the GEOGRAPHIC since covering "Lure of the Catskills" (November 1992).



BIRCH TREES, MOUNT VAN HOEVENBERG

Exploring the region's 2,800 lakes and ponds requires a boat light enough to portage, like a canoe. But on privately owned Lower Ausable Lake (below and right), the craft of choice remains the wider, time-tested Adirondack guide boat.





Bark shanties begat hostels, hostels begat clubs, and—as affluent

boats, split-wood pack baskets, spruce-log lean-tos—all made popular among these lakes and mountains and each expressing a certain notion that getting away from it all has a lot to do with what the Adirondacks are all about.

PAROCHIAL WESTERNERS can get downright touchy on hearing someone call the Adirondacks mountains. "Topographic hiccups" is all the loft one Montana peak bagger gives them, ignoring the fact that the truest measure of ascent, as distinct from elevation, is where you and the mountain start from. The High Peaks here start ascending from bases around 1,500 feet and top out somewhere below Mount Marcy, the highest at 5,344. There are more than 40 other summits above 4,000 feet, and some of the finest fall in hiker's range of Joe's place.

Mornings, those early summers, this porch was our ready room, maps on the table, trail lunch packed, out the door, across the river, and into the trees. It seemed to rain almost every time, going up. But the sun would break through on top, and you'd have it all to yourself, peak after peak, ridge after ridge. Giant, looking east across Champlain to the rumpled Green Mountains of Vermont. Gothics, gazing down acrophobically 2,800 feet into the spangled moat of Lower Ausable Lake. Haystack, high and mighty above the great abyss at Panther Gorge. Marcy—not the now trampled, overvisited, anticlimactic summit but a secret place downslope toward Lake Tear of the Clouds, where a mossy trickle marks the highest headwater of the Hudson River. And Dix, resolute, unforgiving Dix on a day in June, in a wind like December's.



Easterners sought refuge from . . . cities—club begat "camp."

We had set out early, without rain. It was warm for June. My hiking partner, a long-legged fellow from New Jersey, favored a furious pace on the trail. By the time we were over the shoulder of Noonmark into the valley of the North Fork Boquet we had worked up a pretty good sweat. Lunch at midmorning, then up we went, hand over hand in places, an "unrelenting steep climb [the guidebook had warned us], with rough footing." We could hear the wind rising as we neared the top.

Like most of the high ones, Dix, in a little more than three and a half linear miles and 2,500 feet of ascent, pulls you up across three vegetation zones. First, the maple, beech, and yellow birch of the northern hardwood forest. Next, the red spruce and balsam fir of the upper slope. Finally, near Dix's summit at 4,857 feet, an alpine zone of lichened rock and sedge and stunted evergreens called krummholz, from the German, "crooked wood."

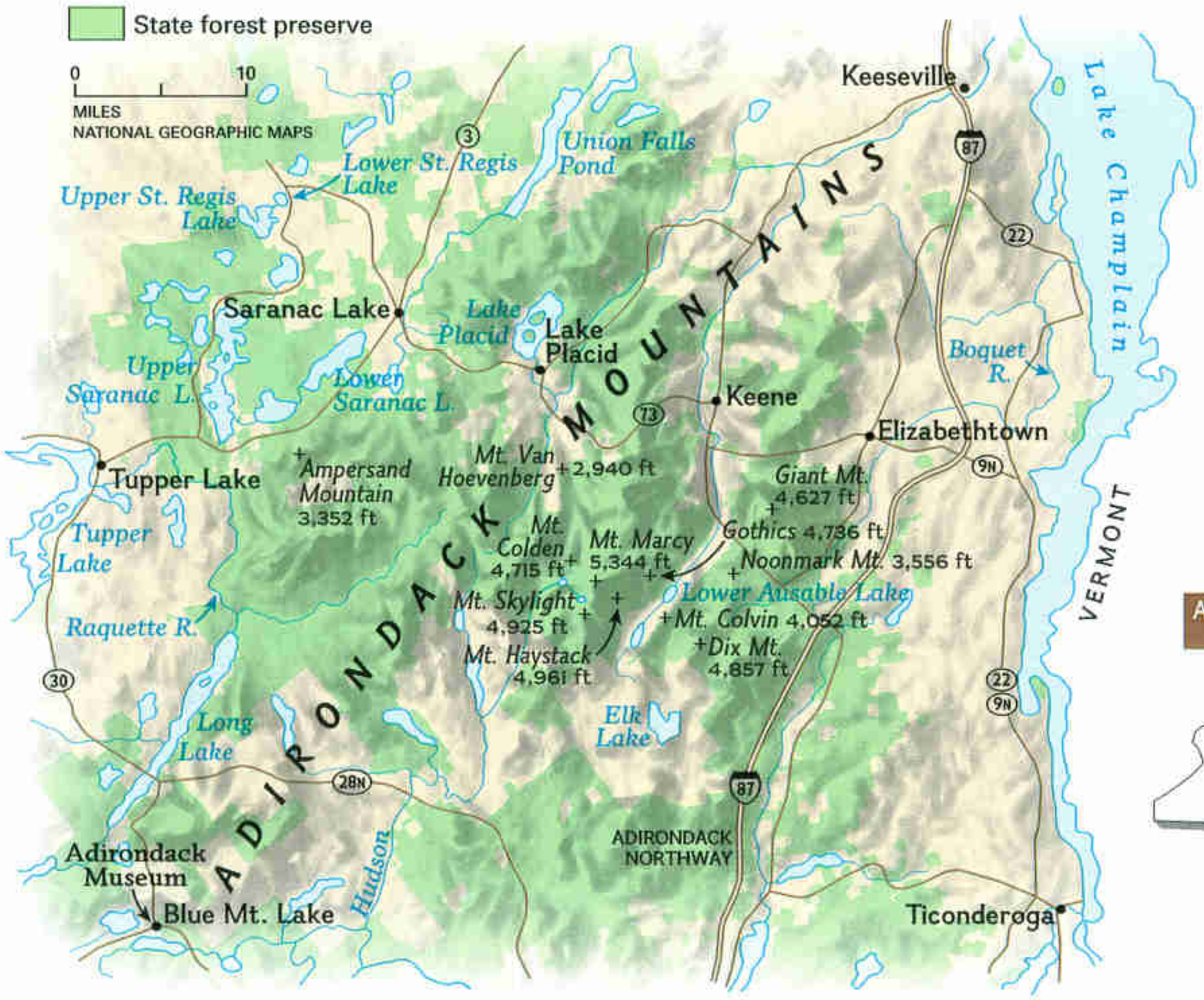
Dix's summit had all that as well as an unobstructed all-around view that might have been top of the charts but for one catch: The frigid, shrieking wind that, if you dared to face it, ripped the salt right out of your tear ducts. The Jerseyman and I dived for cover behind a rock shelf, tugged sweaters and anoraks out of our day packs, and contemplated the humiliating prospect of early retreat. That's when the woman with the limp appeared, coming our way.

Those days, especially in June when the blackflies were drawing blood, one didn't expect much company up in the mountains. On this day, we had seen none, until now.

She was a tall woman with long silver hair flaring from under a red bandanna; hiking shorts hitched to rope suspenders; no jacket



SEPTEMBER SUNRISE FROM MOUNT COLDEN



Lump together Glacier, Olympic, Yellowstone, and Grand Canyon National Parks, and Adirondack Park would still be bigger. A patchwork of property, the park is 57 percent privately owned. The state, which controls the rest, protects it with an unusual constitutional provision stipulating that this land remain forever wild.

The aesthetic pleasures of the High Peaks and other Adirondack wilderness may offer to the modern mind a compelling case for preservation. But in the late 1800s, when "green" was just a color, advocates for a park stressed utilitarian concerns: One day the region's resources might be needed.



or sweater, just a short-sleeved blouse that billowed and flapped like a white flag in the gusting wind. There was a hint of Europe in her accent when she greeted us. She leaned on her walking stick. Would she care to borrow a sweater? Thanks, no—with a wrinkled smile. The walking stick tapped the hard gray skin of the mountain. Do you know how old these rocks are? she said. A billion years. Bedrock. Plagioclase feldspar. Rising from the basement of the Earth. Rising, still? Yes, she said. Several millimeters a year. Well, said the Jerseyman, if we stay up here another billion years, we'll be higher than Everest.

The wind scratched that idea. We decided to head down. The woman wanted to linger on top a bit, and, besides, she'd be going back the other way, to Elk Lake. Thinking of her limp and the seven miles between the top of Dix and the trailhead, I foolishly asked, Are you okay?

That wrinkled smile again. Of course she was okay. The leg? Broke it two years ago, she said. Skiing? No, snowshoes. About a quarter mile down that trail, as a matter of fact. She pointed south, toward Elk Lake.

We had to pry the tale out of her. She was too fine to boast. This was the gist of it: A winter climb, solo, snow on the trail, ice near the top. Slip, slide, snap. High noon and seven miles to her car or a phone or the nearest help. *Mygawd! How did you get out?* She crawled. Strapped the broken leg to a stick and crawled out, bleeding hands and knees the whole way. The sun was halfway up the sky next day before she was safe.

And today, we asked, you come back to Dix to show there are no hard feelings?

Perhaps.

But why?

I had to, she said. You don't want to turn your back on a beautiful mountain.

IT HAS BEEN SAID that the Adirondacks are divided into two parts—mountains and lakes—and that certain boosters of one will have absolutely nothing to do with the other. Here in the northeast quarter of this unusual park, the High Peaks; there, sparkling across the rest of it, the Olympian lakes: Placid, the Saranacs, the St. Regises, Tupper, Raquette, Big Moose. The Adirondack canoe country—surely the better known of the two subregions if only by virtue of its easier access, diverse resorts, and lakeside villages. It is a country I respect for its present character and cultural past, but my druthers lean toward the peaks. Besides, there's a sprinkle of smaller lakes right here in the mountains, and two of the finest are not far from Joe's place.

On days when Young Jerseyman wasn't marching me up some precipitous trail, I'd head for a flat-water spot called the Ice Caves. The caves—crevices, actually—occur where the side of a mountain collides in a jumble of granite blocks with the edge of a fjord-like lake. Ice remains deep in these crevices for much of the summer, sometimes veiling the surface of the lake with mist and invariably cooling the adjacent waters, much to the satisfaction of wild brook trout and those who would prey on them. And beyond the caves, up the shore a way, sat a little three-sided lean-to and a fire pit sufficient for the brewing of black-kettle coffee and the frying of fresh-caught fish.

With permission from its owner, the lean-to was also a splendid place to unroll your sleeping bag on a bed of balsam boughs, to listen for loons, to welcome the last light, to watch the fire pit's embers fade as the stars or moon moseyed across the sky's dark stage, between the mountains. Sometimes you could almost imagine yourself in a bark shanty of the century before, listening to the antique eloquence or foolishness of the region's first boosters.

Now comes Samuel H. Hammond, who, in the year 1857, confesses in *Wild Northern Scenes; or Sporting Adventures With the Rifle and the Rod* that he goes to the Adirondacks to recapture his youth. Hammond has just met a gentleman on Raquette River who says he likes the woods because "one can do here just what he pleases. . . . drink whisky in the raw, chew plug tobacco . . . and not lose his position in society." Good heavens, yes! "The truth is, that it is natural as well as necessary for every man to be a vagabond occasionally."

Now it is 1869. Hot off the press comes a little book titled *Adventures in the Wilderness; or, Camp-Life in the Adirondacks,* by the Boston preacher William H. H. Murray. And what a lively sermon it is, all about the salubrious and recuperative powers of the North Woods and sporting made easy by the very nature of the country's interconnected waterways. "If there is one kind of work which I detest more than another," the preacher writes, "it is *tramping.*"



JULY BOATING PARTY, LOWER AUSABLE LAKE

Shoeing up Mount Skylight, Adirondack resident and part-time guide Kevin Burns appreciates the power of place. "I grew up in Albany, which now is busy as an ant farm," he says, "everybody racing for their piece of food." But not here. "When it snows," he says, "I smile."





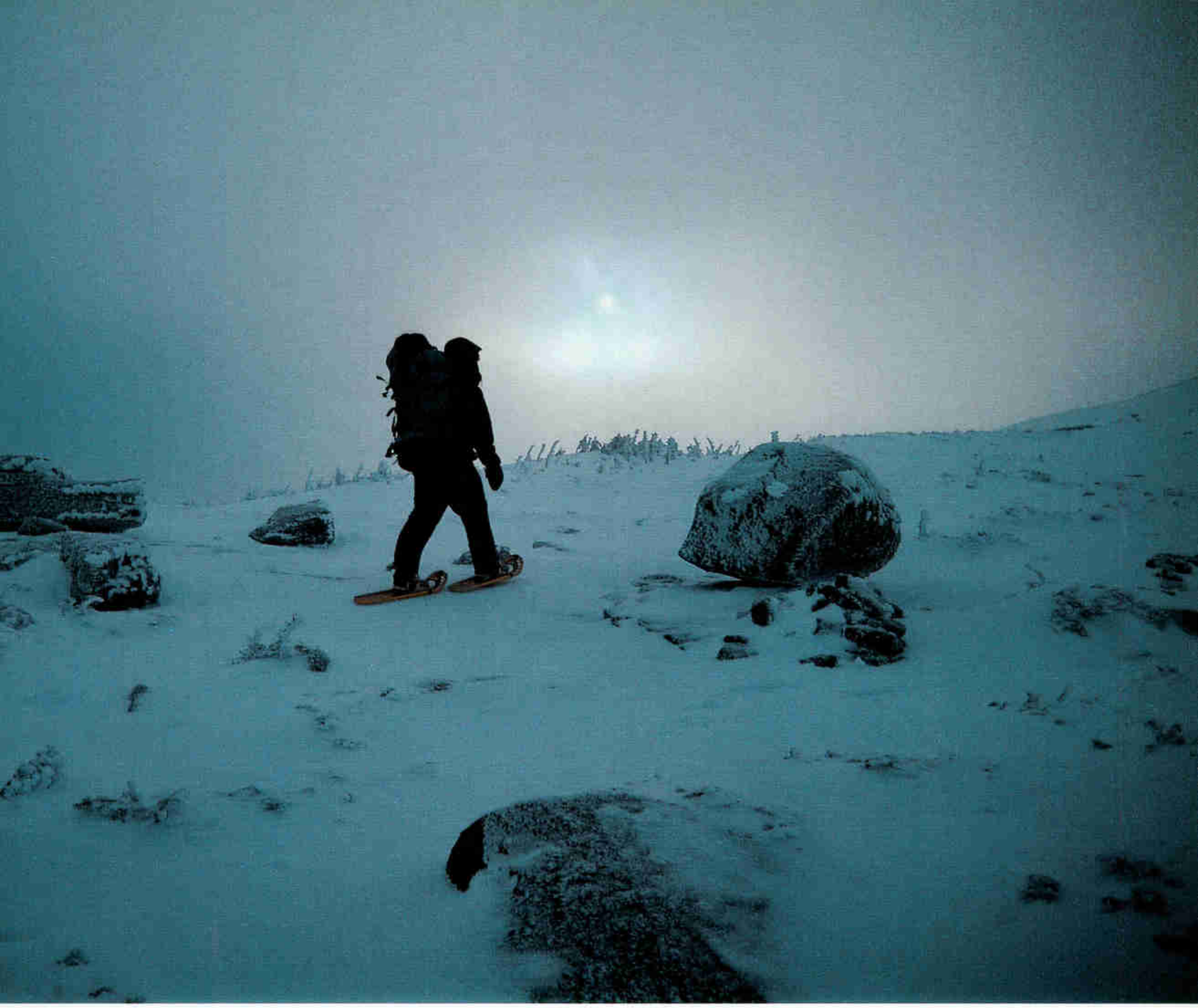
It is almost dark now. A sliver of moon can be seen in the sky

But, he goes on, "in the North Woods . . . you do all your sporting from your boat. . . . This takes from recreation every trace of toil."

So the stampede to the Adirondacks began. Bark shanties begat hostels, hostels begat clubs, and—as affluent Easterners sought refuge from the ills of untidy cities—club begat "camp," that rambling, elegantly rustic architectural hybrid, part American log cabin, part Swiss chalet, all gussied up with wide stone hearths and antlers over the mantelpiece.

FOR A CASUAL VISITOR such as I, it's tempting to think of the Adirondacks only as a playground. After all, here's this park with a constitutional line around it, and within it all these protected state lands now labeled as wilderness or wild forest or primitive area. And here are all these summer people—winter people too—still trying to escape the perceived imperfections of the cities and suburbs where they vote and work and raise their kids during most of the year. But what about the folks who vote and work and raise their kids in the Adirondacks during all of the year? And what about the private lands where they live, and the lakes and forests still owned by paper companies and fortune's few remaining heirs whose eyes are fixed not on grooming the public's pleasure but on courting the marketplace? These folks and lands are part of the Adirondacks too.

To be sure, private interests and public concerns were in conflict here even before the park was established in 1892. But the jousting didn't get rough until the 1960s, after the road-builders skewered the region's east side with an interstate highway. I was delighted. The



above Mount Colvin, almost touching it. Wish *I* could.

Northway cut my driving time between New York City and Joe's place by two hours. Of course, it cut everyone else's time too.

One of the first efforts to spare the Adirondacks from the anticipated trampling was a proposal to create in the mountains a 1.7-million-acre national park, embracing both public and private lands. The proposal died for lack of support; most conservationists preferred the existing state park, however imperfect. Still, the federal scheme fostered a better idea, more relevant to holding the line against runaway development throughout the entire region. This was the creation by New York State of an Adirondack Park Agency, with the regulatory power to deny incompatible uses and control building densities on private land.

Alas, the recent history of the Adirondacks has been dominated by accounts of skirmishes between the land-use agency and adversarial developers, politicians, and property rights groups. An office trashed. A barn burned. A shot fired. But the headlines obscured the real news—that for all the agency's battles, and some were lost, the controls so far have succeeded in barring chaotic development from much of the private land. Meanwhile, for most of the region's permanent residents, life goes on relatively unobstructed either by too much government or too little opportunity to share, however indirectly, in the modest benefits that backcountry tourism inevitably brings.

"Oh, it's not as bad up here as some people let on," a local young man at a gas pump in Keene told me one day. "And it's not so good either. Never has been. But I'll tell you this. Be a whole lot worse—you know what I mean?—if everyone had his own way."



MARCH STORMSCAPE, AMPERSAND MOUNTAIN

LIGHTS OUT, OLD NOONMARK, old plagioclase feldspar or whatever it is up there on the topmost ledge, daring the shadows. Looks like there's just enough edge left on the purple sky to tempt me out of this rocking chair, just enough dusk to go out across that field to pay my respects to Colvin.

I try to do this at least once every visit to Joe's place—sneak away up the field to a spot where, looking south this time of evening, you can make out the dark silhouette of a certain mountain. It is not an impressive peak in the Adirondack scheme of things, only 39th in order of height; not named, like Marcy and Dix, to honor the grand memory of a governor of the Empire State. This mountain honors a man whose legacy here will outlast that of any governor. The name's Colvin. Verplanck Colvin, superintendent of the Adirondack Survey, 1872-1900. Hats off, ladies and gentlemen. This is the guy who made it happen.

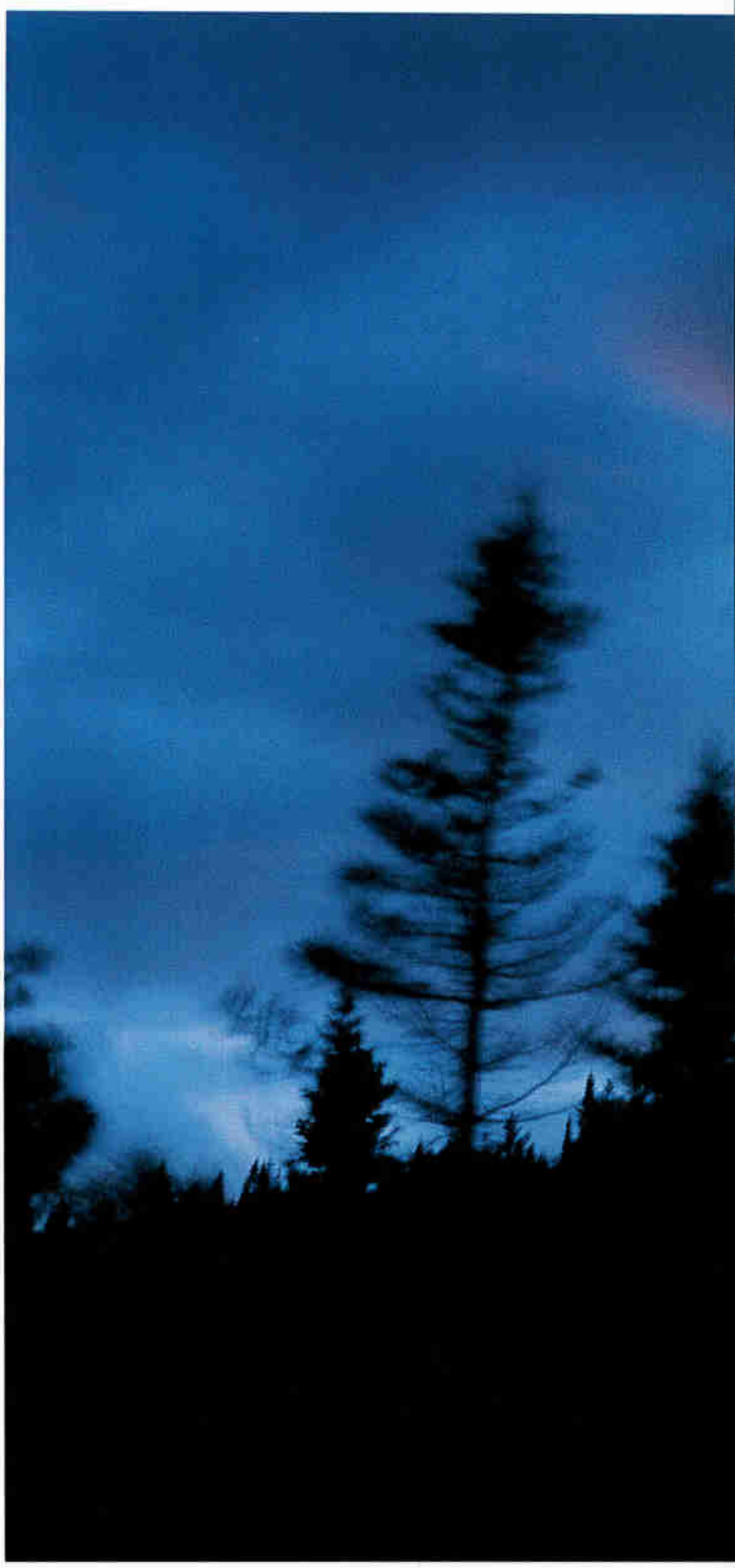
By all accounts he was a most unusual guy: obsessed in his work, abrasive, lacking in humor; driving subordinates to desertion after midnight scrambles over trailless peaks; marshaling mountains of data from theodolites and transits and T-squares and chronometers; and then, in a series of published reports, tantalizing the legislature with his stylish accounts of gothic adventures in the wilderness. And invariably one came to the Colvinian bottom line—that these forests must be preserved for posterity and the Adirondacks set aside as a park for New York, even "as is the Yosemite for California and the Pacific states."

Colvin's was not the only voice raised at the time on behalf of the wild Adirondacks. But his was surely the loudest and most persistent, and—cumulatively—the most persuasive. In 1885 the solons of Albany in their spats and wing collars consented to place the state lands into a forest preserve, and seven years later to declare the whole region a park.

It is almost dark now. A sliver of moon can be seen in the sky above Mount Colvin, almost touching it. Wish *I* could.

That was my last climb, Colvin. It's so nearby, you'd think it might have been one of my first. But, no, I was too busy bagging higher peaks, like Dix—and in those days who gave a hoot for history?

After a hoot or two, I started coming up here



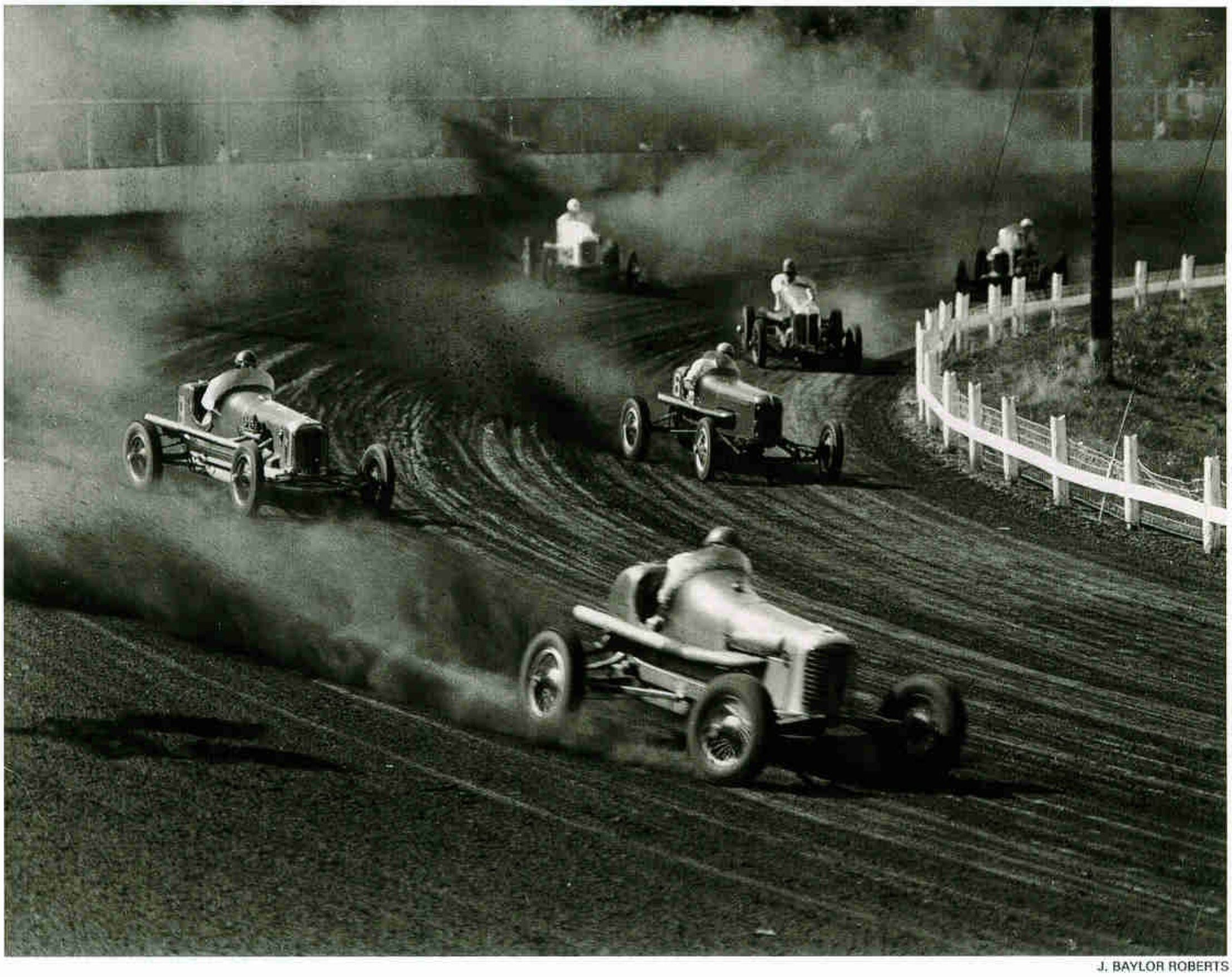
Facing a sunset instead of a sawmill, evergreens near Lake Colden survive largely because of the passions of early conservationists. Now, feelings aside, New Yorkers' commitment here will probably endure thanks to the legal shield that protects this wild expanse.



to look at the mountain at dusk. And I promised myself that one of these days I'd get up on top to see if it was truly the "throne" that Colvin had found when he first scaled it in August 1873. One of those days finally came a number of Novembers ago.

It was not a grueling uphill trek, like Dix. But I thought of Dix, and of the lady with the limp. Near the top there was ice on the trail. The prospect was cloudy and gray, and it was late in the day, so I couldn't be sure about the throne. Maybe Old Verplanck was stretching it some. Who knows? All I know is that the descent, normally the most forgettable, knee-jarring segment of any mountain experience, was magic. I had no problem with the ice. Dusk turned to dark. Down in the leafless hardwoods a full moon lighted the winding trail beside a musical brook. How glad I was to be heading home, yet how sad to be leaving Mount Colvin.

It was just like the silver-haired woman had said long ago, with her stick rapping the windy skullcap of Dix. Even in the dark, it isn't natural to want to turn your back on a beautiful mountain. □



J. BAYLOR ROBERTS

■ FROM THE GEOGRAPHIC ARCHIVES

Fairly Fast—60 Years Ago

Custom-built "big cars" roared around the half-mile dirt track at the Iowa State Fair in Des Moines in 1938. That was the first year that auto racing was a featured event, "and racing has drawn top crowds to the fair every summer since," says a spokesman. These cars were far from "stock"; with no restrictions on engine size some packed an airplane engine under the hood and could reach speeds of more than 120 miles an hour. One entry was described in a local paper as a "$10,000 chrome-trimmed car that has set the racing world agog with its streamlined body design and tremendous horsepower." This photo, never published, was taken for our August 1939 story "Iowa, Abiding Place of Plenty."

Things we've noticed about Americans:

Going places is a national obsession.

Been there, 1969. ← CASE IN POINT: → The reliable Chevy Malibu.



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NATIONAL GEOGRAPHIC

On Television



BOTH BY DAVID ALAN HARVEY

■ EXPLORER, MAY 31, 7 P.M. ET

Fast! Loud! Hot!

Stock car race driver Dale Jarrett kisses his wife, Kelley, before starting the Coca-Cola 600 at the Charlotte Motor Speedway in North Carolina. EXPLORER's "Stock Car Fever" runs the course with Jarrett at speeds of more than 180 miles an hour in Charlotte and at the Talladega Superspeedway in Alabama. Split-second pit-crew work, like that performed on number 43 (below), can win or lose a race.

Begun in the 1930s on dirt tracks in the Southeast, with roots in the moonshine trade, stock car racing today is a two-billion-dollar-a-year industry. And it's America's fastest growing spectator sport, according to the National Association for Stock Car Auto Racing.

The cars are all-American and, despite the name, assuredly not stock. They're specially built Fords, Chevys, and Pontiacs plastered with corporate logos and powered by ground-throbbing V-8 engines. NASCAR racing is loud, fast, and dangerous. And its camera-toting fans? Call them "Bubbarazzi."



■ PROGRAM GUIDE

National Geographic Specials
NBC. See local listings.

National Geographic EXPLORER
TBS. Sundays, 7 p.m. ET.

National Geographic Videos and Kids Videos Call 1-800-627-5162.

Programming information accurate at press time; consult local listings.

Look for the National Geographic Channel when traveling in the United Kingdom, Ireland, Scandinavia, Finland, and Australia.



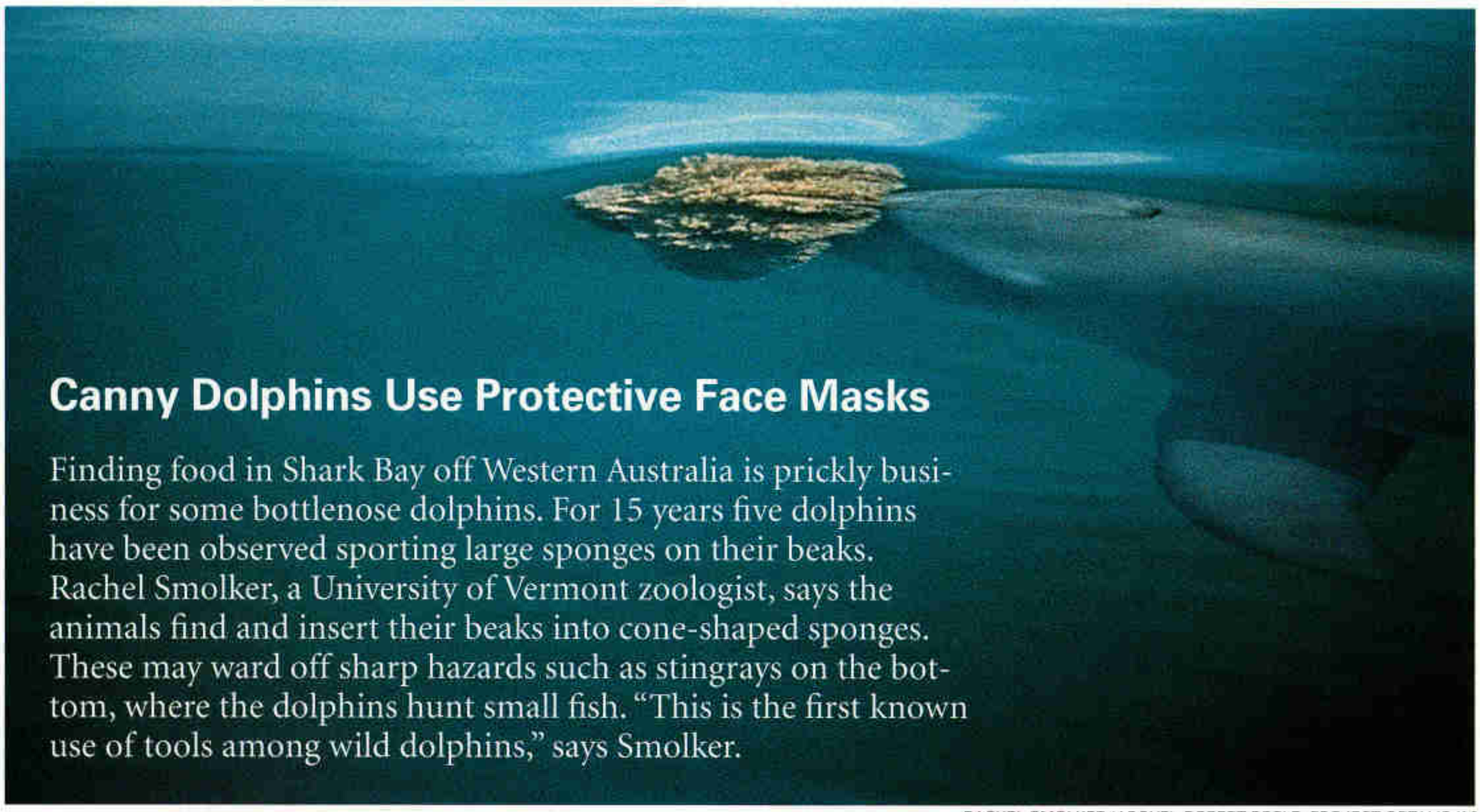
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NATIONAL GEOGRAPHIC

Earth Almanac



Canny Dolphins Use Protective Face Masks

Finding food in Shark Bay off Western Australia is prickly business for some bottlenose dolphins. For 15 years five dolphins have been observed sporting large sponges on their beaks. Rachel Smolker, a University of Vermont zoologist, says the animals find and insert their beaks into cone-shaped sponges. These may ward off sharp hazards such as stingrays on the bottom, where the dolphins hunt small fish. "This is the first known use of tools among wild dolphins," says Smolker.

RACHEL SMOLKER (ABOVE); ROBERT POPLE, PROJECT ORTALIS '96



JEAN PHILIPPE BOUBLI

■ NGS RESEARCH GRANT

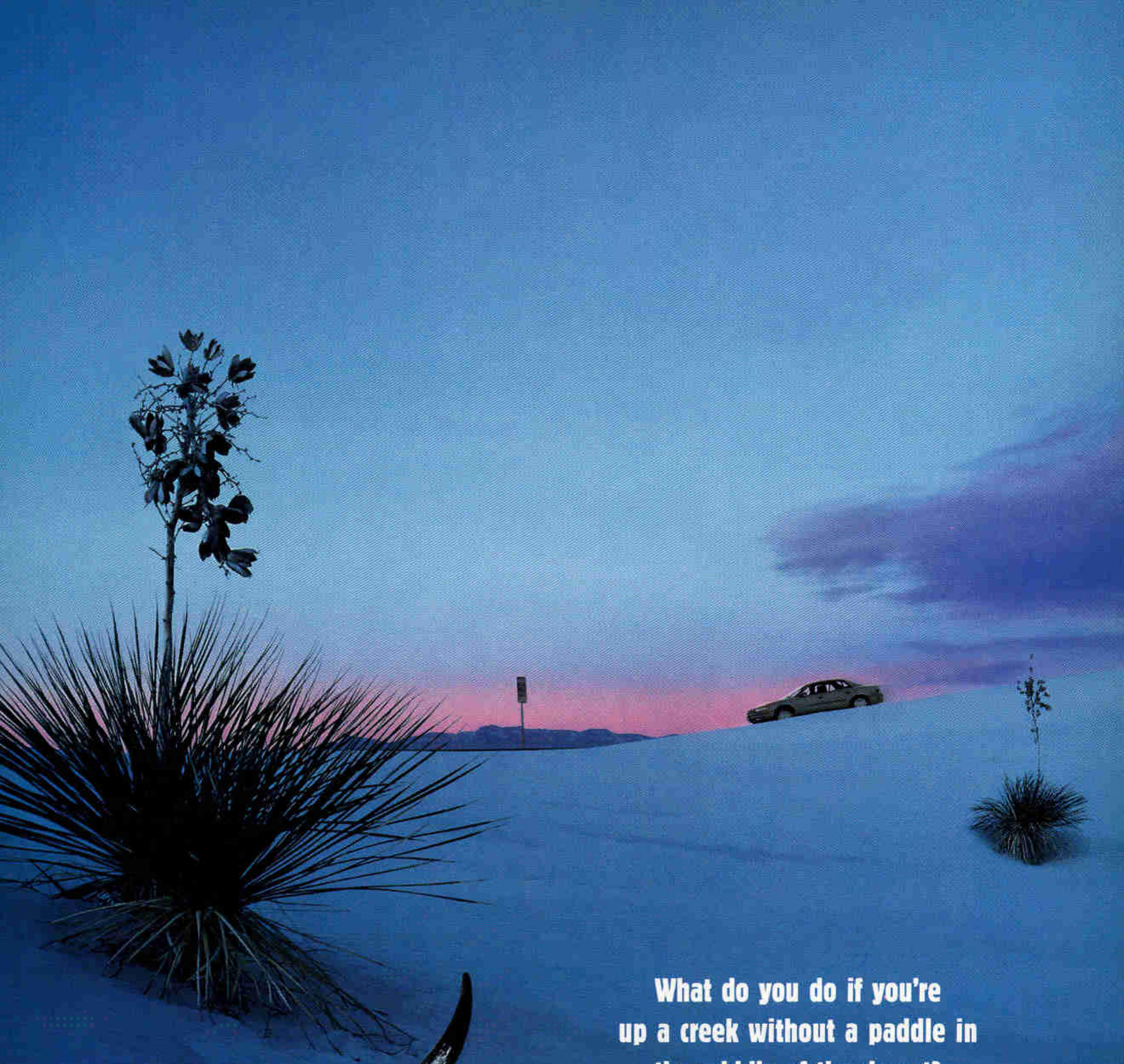
Brazilian Hunters Pressure Primates

Most of Brazil's Yanomami people move from place to place to hunt monkeys, which gives surviving animals time to rebuild their populations. But in Pico da Neblina National Park the Yanomami have been encouraged since 1956 to settle around a mission, says Jean Philippe Boubli of the University of California at Berkeley: "They now use shotguns and have driven local howler monkeys [above, smoked and dried], spider monkeys, and black uakaris nearly to extinction." Gold miners working illegally in the park are also hiring Yanomami to shoot monkeys, paying for the meat with gold dust.

Haven for a Threatened Prince

Fanning a headdress fit for an Inca ruler, a Pacific royal flycatcher caught in biologist Robert Pople's mist net erects his crest—a display rarely seen in the wild. "It was utterly amazing," Pople recalls. In 1996 he led a team of biologists on a survey of the dry forest of western Ecuador. Heavily logged, only about one percent remains. They appraised a 5,000-acre ranch that Fundación Pro-Bosque, an Ecuadorian conservation group, was thinking of buying. The biologists found the flycatcher and seven other threatened species on the ranch—and the Ecuadorian conservationists purchased nearly 1,500 acres.





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From the Belly of a Shark, a Cancer Cure?

Do sharks get cancer? Many researchers think they don't. Do sharks have some powerful agent that could cure cancer in humans? One scientist has experimented with feeding shark cartilage to patients with tumors. Now a Pennsylvania company says it has discovered compounds in a common shark, the dogfish (right), that may starve tumors by cutting off their blood supply. Though most sharks have only primitive immune systems, the defenses of the dogfish may be more advanced.

"We found a whole new class of 17 compounds, including one called squalamine, in the stomachs and livers of dogfish," says Jay Moorin, chairman of Magainin Pharmaceuticals. "For a tumor to grow, it needs its own blood supply, and in the laboratory squalamine prevents the tumor from developing capillaries." Moorin says that testing of the drug on human tumor patients is under way.



JEFF GOODMAN, NATURAL HISTORY PHOTOGRAPHIC AGENCY



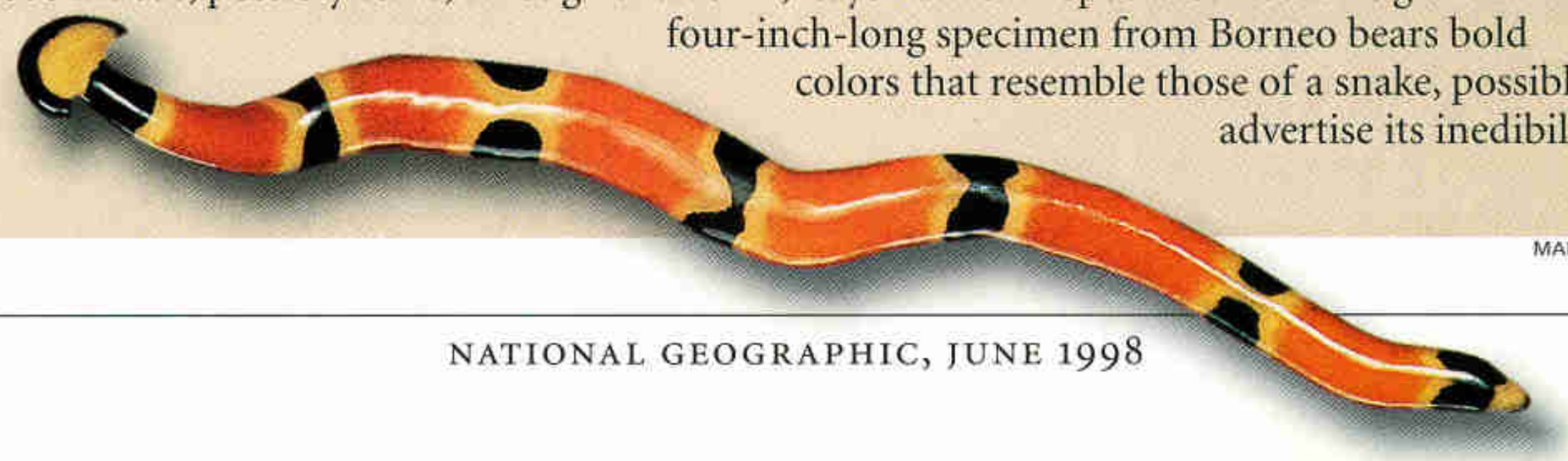
PAMELA FRIERSON

Attention Gooneys: Anchors Aweigh

"We are trading guns for gooneys," observed Navy Secretary John Dalton. In a ceremony on Midway last year he transferred the Pacific atoll—a Navy air station since 1941—to the U.S. Fish and Wildlife Service. As many as 1.5 million albatrosses, the "gooney birds" with which sailors uncomfortably shared their operations, are now reclaiming their little islands. Hundreds of ecotourists have already taken charter flights from Hawaii to enjoy the refuge's birds, sea turtles, and Hawaiian monk seals.

Worm With a Warning: "Don't Eat Me"

Primitive flatworms have but a single orifice that both takes in food and expels waste. But some species may not be helpless—instead they may possess a nasty surprise for predators. "They exude copious mucus, possibly toxic, through their skin," says flatworm specialist Robert Ogren. This four-inch-long specimen from Borneo bears bold colors that resemble those of a snake, possibly to advertise its inedibility.



MARK W. MOFFETT

If You Traded Securities on the Nasdaq Market Between May 1, 1989 and July 17, 1996

Please Read This Summary Notice:

THE UNITED STATES DISTRICT COURT FOR THE SOUTHERN DISTRICT OF NEW YORK ("THE COURT") HAS ORDERED THAT NOTICE BE GIVEN OF THE PENDENCY OF CLASS ACTION AND OF CERTAIN PROPOSED SETTLEMENTS IN IN RE: NASDAQ MARKET-MAKERS ANTITRUST LITIGATION, 94 CIV. 3996 (RWS), M.D.L. NO. 1023 (S.D.N.Y.) ("THE ACTION").

The Court has certified the Action as a class action on behalf of all persons, firms, corporations, and other entities (excluding defendants and other Nasdaq market-makers, and their respective affiliates) who purchased or sold Class Securities on the Nasdaq National Market, trading directly (or through agents) with the defendants or their alleged co-conspirators, or with their respective affiliates, during the period May 1, 1989 through July 17, 1996 ("Class Period"). The Class includes, but is not limited to, trades through brokers acting as agents. For purposes of this Class definition, the term "Class Securities" refers to 1,659 securities traded on Nasdaq during the Class Period. A list of the Class Securities appears in the Class Notice.

- **If you are and wish to remain in the Class, you need not take any action at this time.**
- **If you meet the Class definition, you will be deemed a member of the Class unless by July 14, 1998 you exclude yourself according to the instructions in the Class Notice.**

If you remain in the Class, then you will be bound by any settlements (including the Proposed Settlements, discussed below) and any favorable or unfavorable judgments entered in the Action. The Class is represented by Class Counsel, whose efforts are coordinated by Plaintiffs' Co-Lead Counsel, who are: Arthur M. Kaplan, Esq., Fine, Kaplan & Black, A Restricted Professional Company; Christopher Lovell, Esq., Lovell & Stewart, LLP; Leonard B. Simon, Esq., Milberg Weiss Bershad Hynes & Lerach LLP; and Robert A. Skirnick, Esq., Meredith Cohen Greenfogel & Skirnick, PC. You may enter an appearance through separate counsel, at your own expense.

Plaintiffs allege that the defendants and others successfully conspired to increase and fix the "spreads" paid by plaintiffs and the members of the Class in connection with purchases and sales of Class Securities. The spread is the difference between the bid and the ask price quoted for a security, and allegedly represents a transaction cost borne by buyers and sellers of Nasdaq securities. Plaintiffs seek to recover treble damages for the Class, together with reimbursement of costs, an award of attorneys' fees, and an injunction. The defendants are 37 major Nasdaq market-makers identified in the Class Notice. The defendants have denied all of plaintiffs' allegations and have asserted numerous affirmative defenses. **The Court has not adjudicated, and expresses no opinion regarding the merits of, any claims or defenses.**

Class Counsel have negotiated Proposed Settlements with all defendants, subject to Court approval. The Proposed Settlements provide for aggregate payments, which, including interest, will total (before deductions for fees and expenses permitted by the Court) approximately **$1,027,000,000.00** by the anticipated time of distribution in 1999. The proposed settlements contain a waiver of rights and broad release of claims, the terms of which are included in the full class notice. **The Court will conduct a Hearing on the final approval of the Proposed Settlements and any petitions for attorneys' fees and reimbursement of expenses on September 9, 1998 at 10 a.m. Any Class member wishing to appear and be heard must submit a Notice of Intention to be Heard, not later than July 14, 1998, according to the instructions in the Class Notice. The full Class Notice is being mailed on or about May 15, 1998 to persons identified by defendants as potential class members.**

Dated: May 15, 1998 Clerk of the Court, United States District Court for the Southern District of New York.

TO RECEIVE THE FULL CLASS NOTICE (AND FUTURE NOTICES):

CALL: 1-800-933-6363

OR

WRITE: NASDAQ LITIGATION, PO BOX 866, NEW YORK, NY 10019

OR

VISIT: http://www.nasdaqlitigation.com

OR

E-MAIL: notice@nasdaqlitigation.com

PLEASE DO NOT TELEPHONE ANY DEFENDANT, CLASS COUNSEL OR THE CLERK OF THE COURT.



BOTH BY GALEN ROWELL, MOUNTAIN LIGHT

Nepal's Share of a Lofty Plan—a Himalayan Park

Below Earth's third tallest peak—28,209-foot Kanchenjunga in Nepal—live Himalayan black bears, blue sheep, musk deer, and endangered snow leopards. This mountain ecosystem, which also includes one of Nepal's largest glaciers, spills across the borders with India and China.

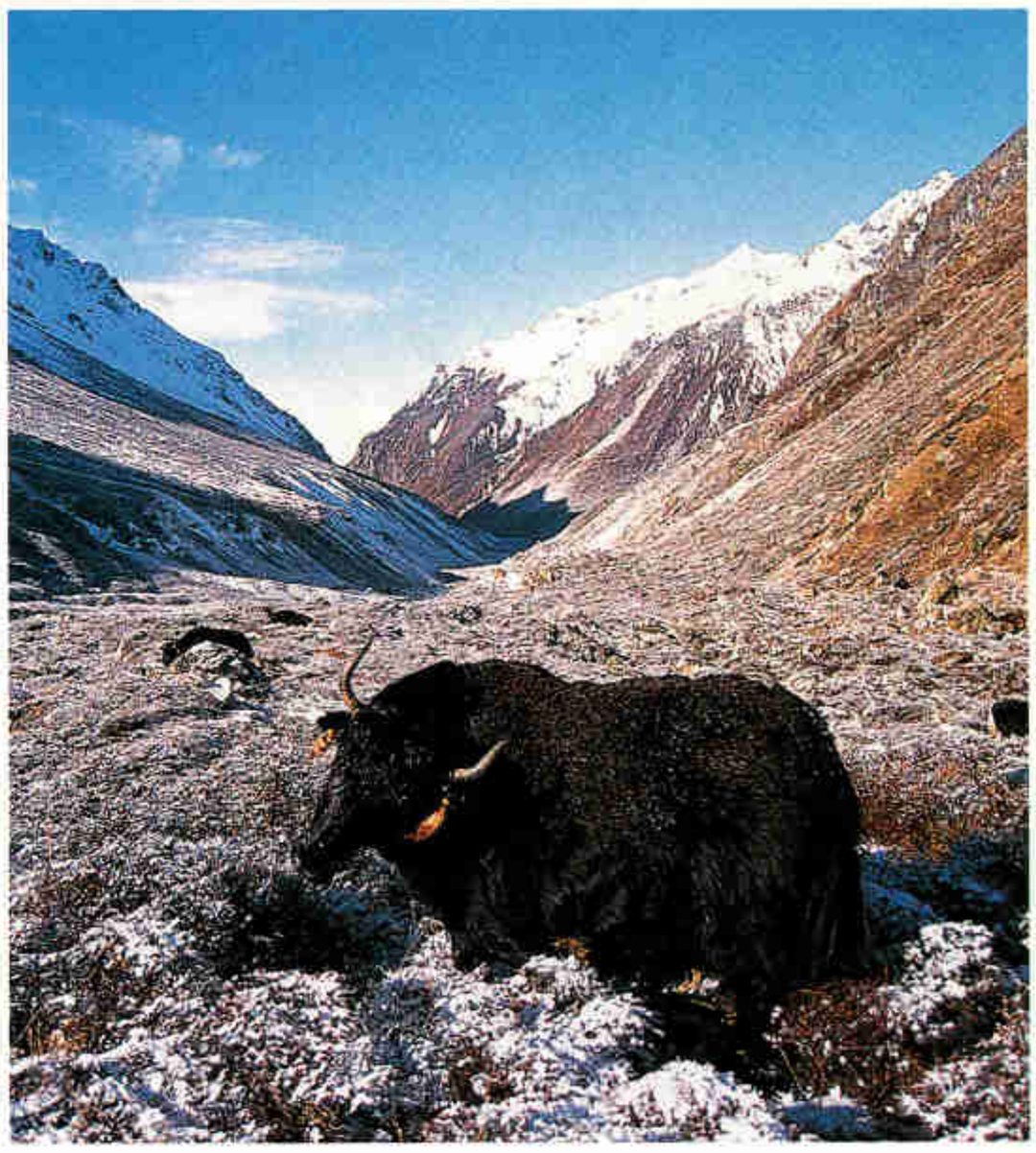


Conservationists dream of having the three governments create a joint sanctuary by the year 2000. In 1977 India declared a national park along part of its border with Nepal. Last July Nepal created 690-square-mile Kanchenjunga Conservation Area. Both countries hope that China will now add a section in Tibet.

Surveying Nepal's portion, researchers from the World Wildlife Fund, which helped Nepal create Kanchenjunga, greet villagers near the sanctuary (above). About 6,200 people from 13 ethnic groups, including Sherpas, live within the reserve. "What sets this project apart is that local people are empowered to make their own decisions and preserve their culture," says photographer Galen Rowell.

In an alpine valley a grazing yak, along with others nearby, "shows the low impact of pastoralists here compared with elsewhere in the Himalaya. They keep fewer yaks, which leaves plenty of forage for wild blue sheep to share," says Rowell.

TEXT BY JOHN L. ELIOT



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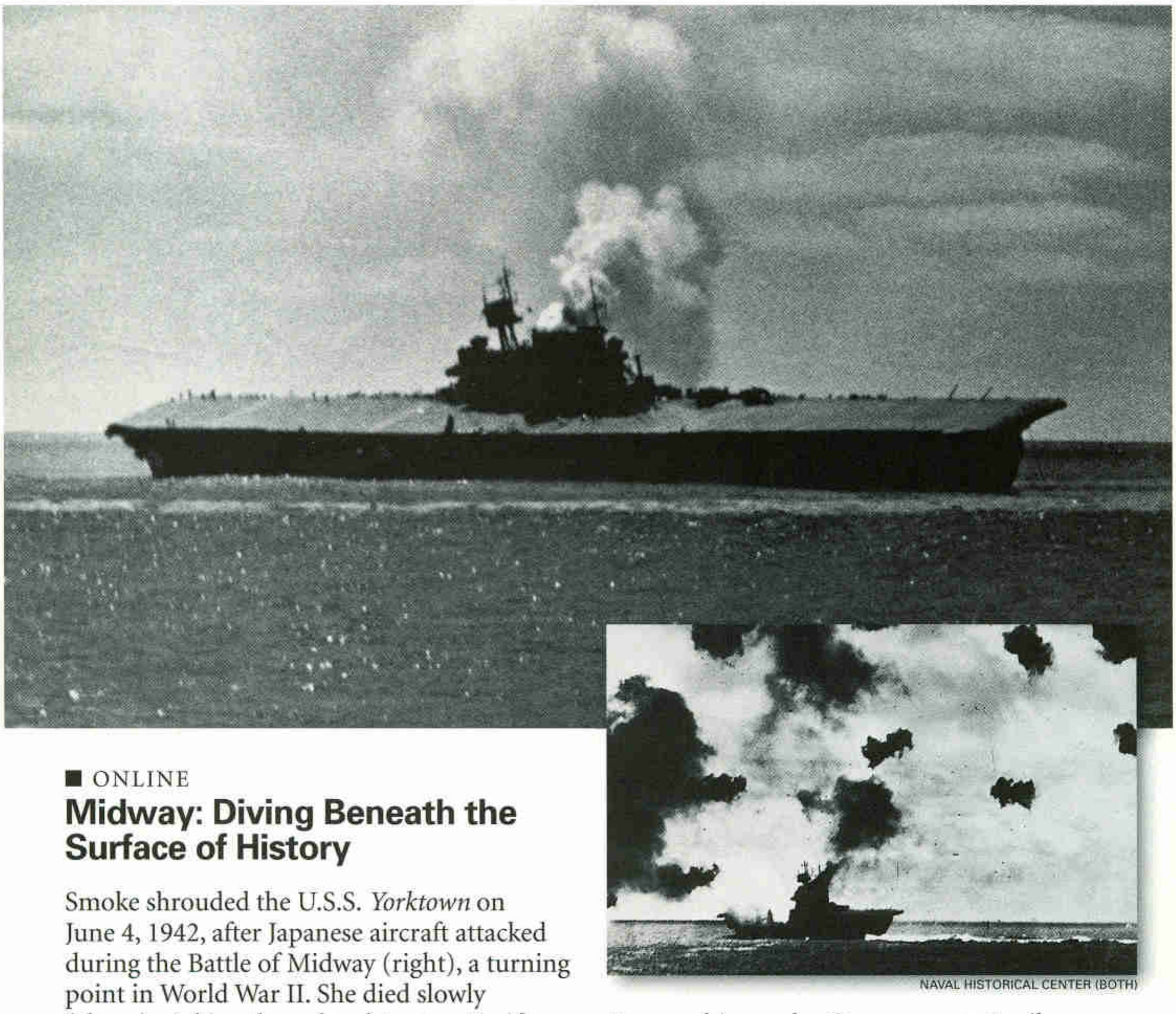
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■ ONLINE

Midway: Diving Beneath the Surface of History

Smoke shrouded the U.S.S. *Yorktown* on June 4, 1942, after Japanese aircraft attacked during the Battle of Midway (right), a turning point in World War II. She died slowly (above), sinking three days later to a Pacific graveyard 17,000 feet deep, shared by four Japanese carriers and nearly 500 aircraft.

That stretch of seafloor has snared the attention of deep-sea explorer Bob Ballard (below, at left, during his investigation of Roman shipwrecks, GEOGRAPHIC, April 1998). You can join him aboard a naval research vessel as he probes the Midway wrecks by reading our exclusive dispatches at *www.nationalgeographic.com/features/98/midway.*



PRIIT J. VESILIND, NGS STAFF

■ Search for the giant squid described in this issue by checking daily accounts from author Tom Allen at . . . */features/97/kaikoura.*

■ Baseball? Basketball? No, America's fastest growing spectator sport is stock car racing. Read the article in this issue; then share your views online at . . . */media/ngm/9806/forum.*

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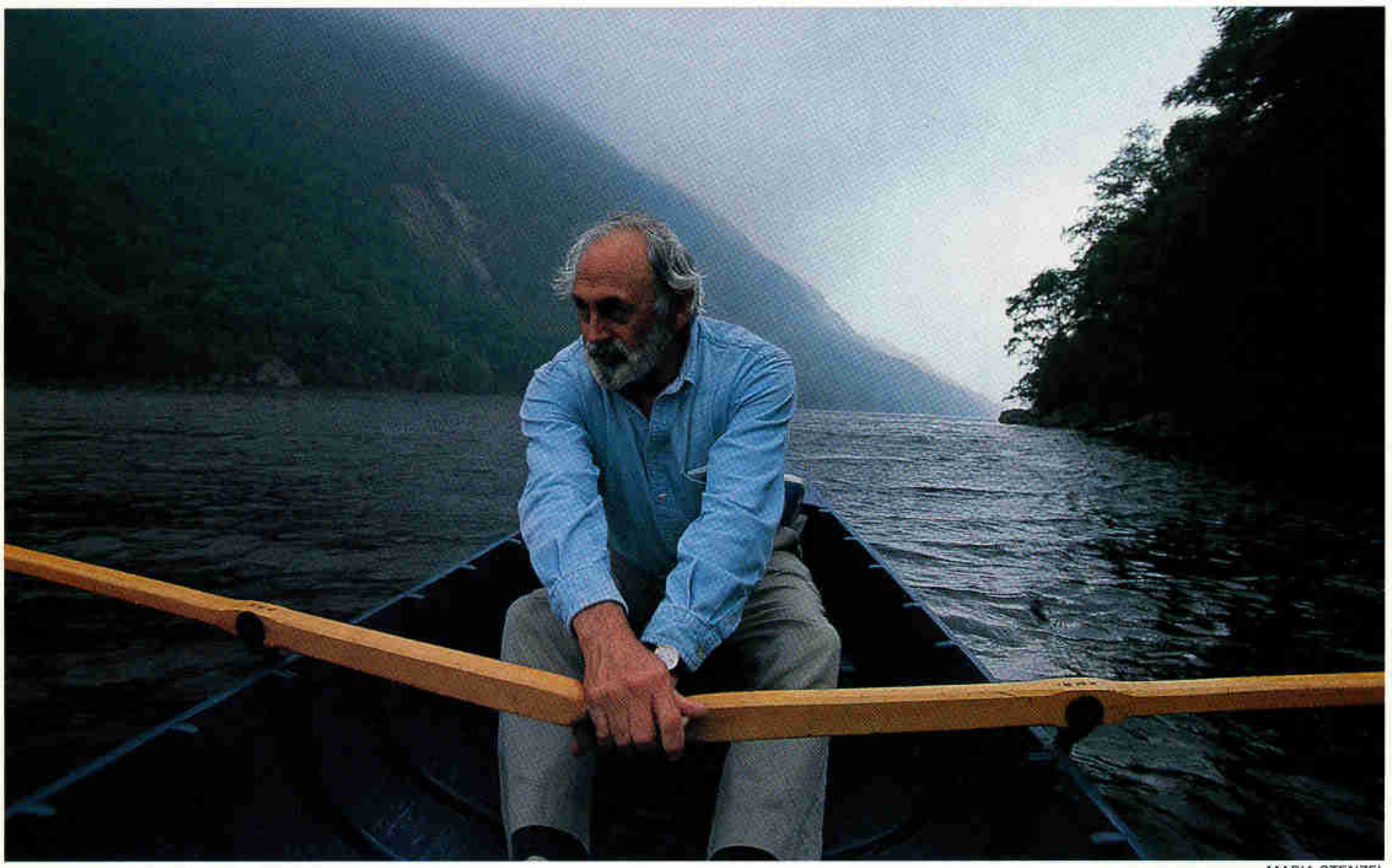


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On Assignment



MARIA STENZEL

■ ADIRONDACKS

Storm Warning

If writer John Mitchell looked worried, he had reason: A squall was brewing on Lower Ausable Lake. Photographer Maria Stenzel had been badgering him for a turn at the oars, so when whitecaps started popping over the gunwales, Gentleman Mitch surrendered. "I figured she was in better shape to pull us to shore," he recalls. The pair got back safe—but soggy.

An Ohio flatlander, Mitchell did stints at two book publishers, six newspapers, and *Newsweek,* plus two decades of freelance writing, before joining the GEOGRAPHIC. Somewhere along the line a colleague accused him of liking trees more than people. "I deny it," says Mitch. "Sort of."



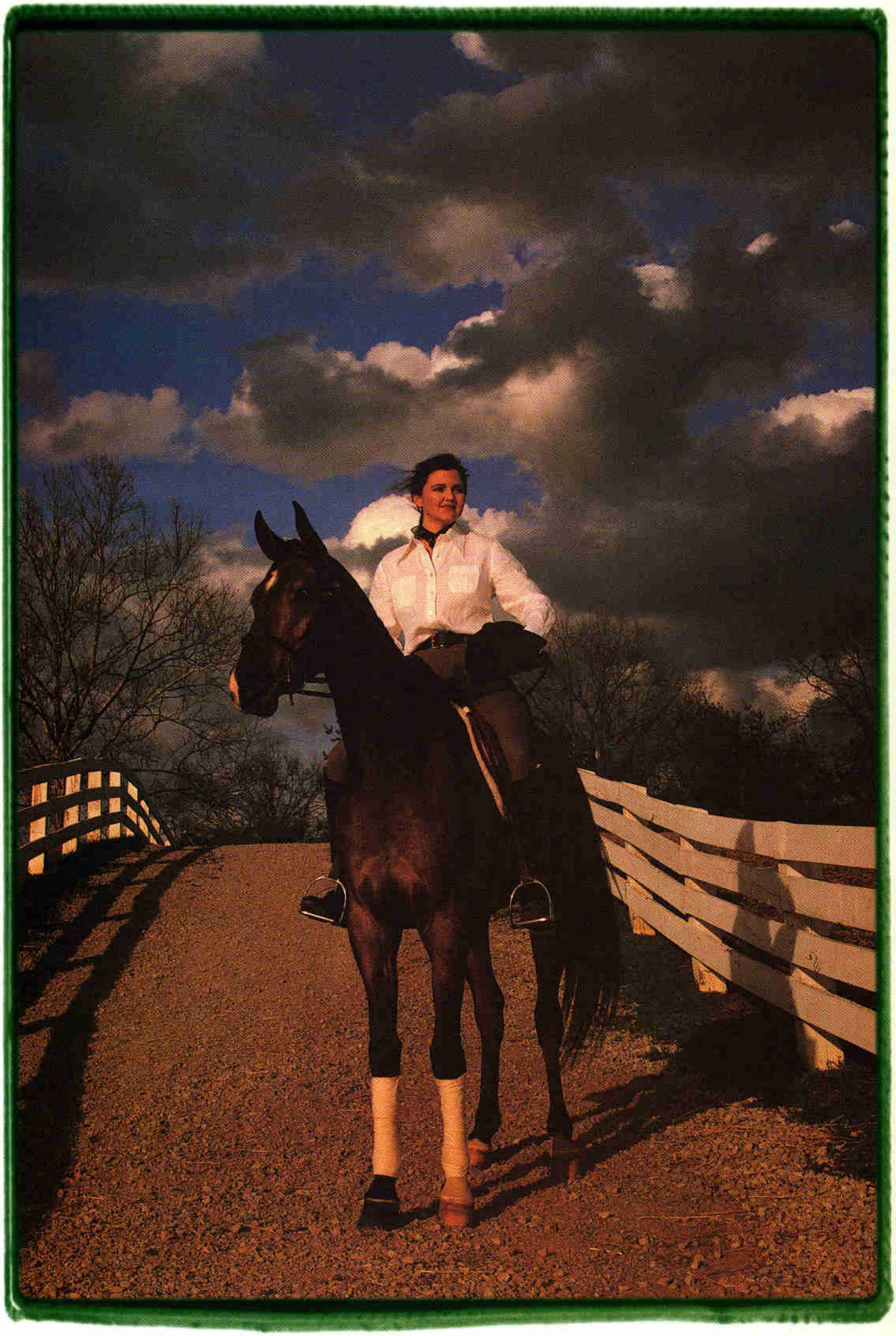
MAKSIM KOUZNETSOV

■ TRANS-SIBERIAN RAILROAD

Just Hanging Out

"This was the most physically difficult story I've ever done," says photographer Gerd Ludwig, who spent hours dangling from open doors on a speeding train—windchill minus 100°F—with just a rope around his waist to hold him. One snowy day, Gerd recalls, the train ground to a halt. "I wondered why we had stopped." Then he saw two distant figures trudging toward him. "The engineer and his assistant had seen this crazy guy hanging off a car," explains Gerd, who had secured permission for the dangerous shoot before he started. "Their boss had simply forgotten to tell them about me."

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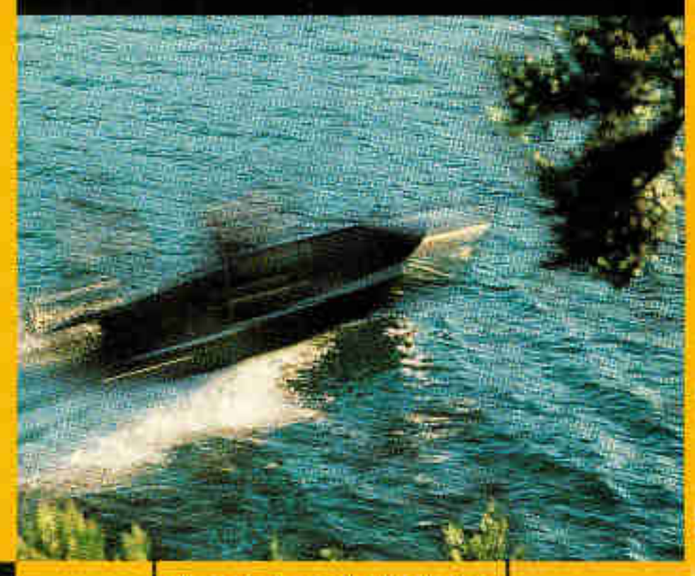
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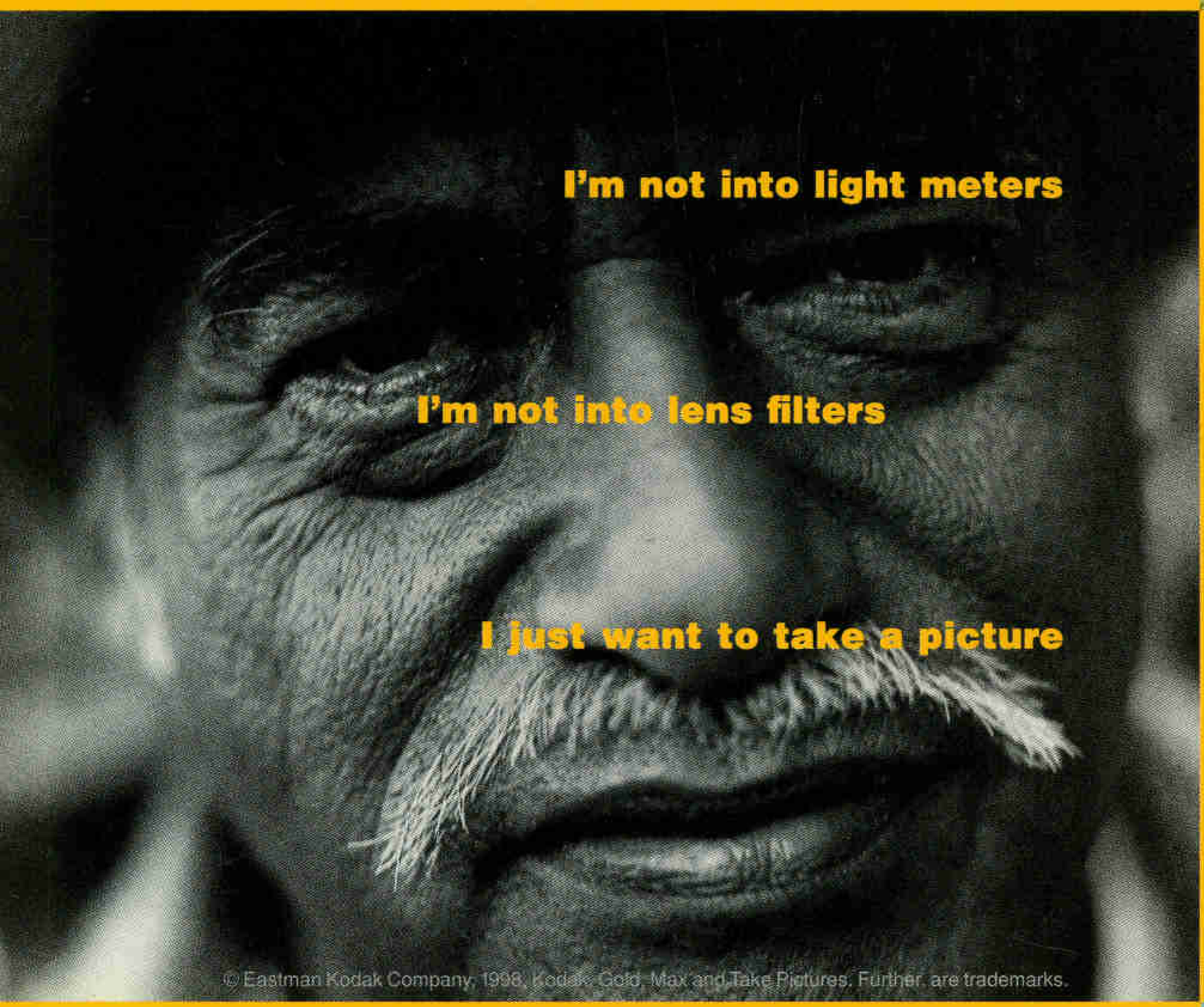
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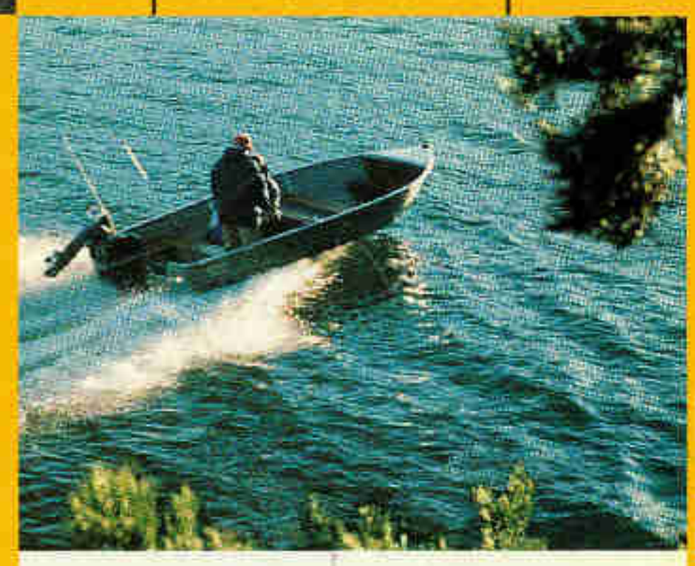


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